

# Twenty two years of experience on Stem Cell Transplantation in Iran

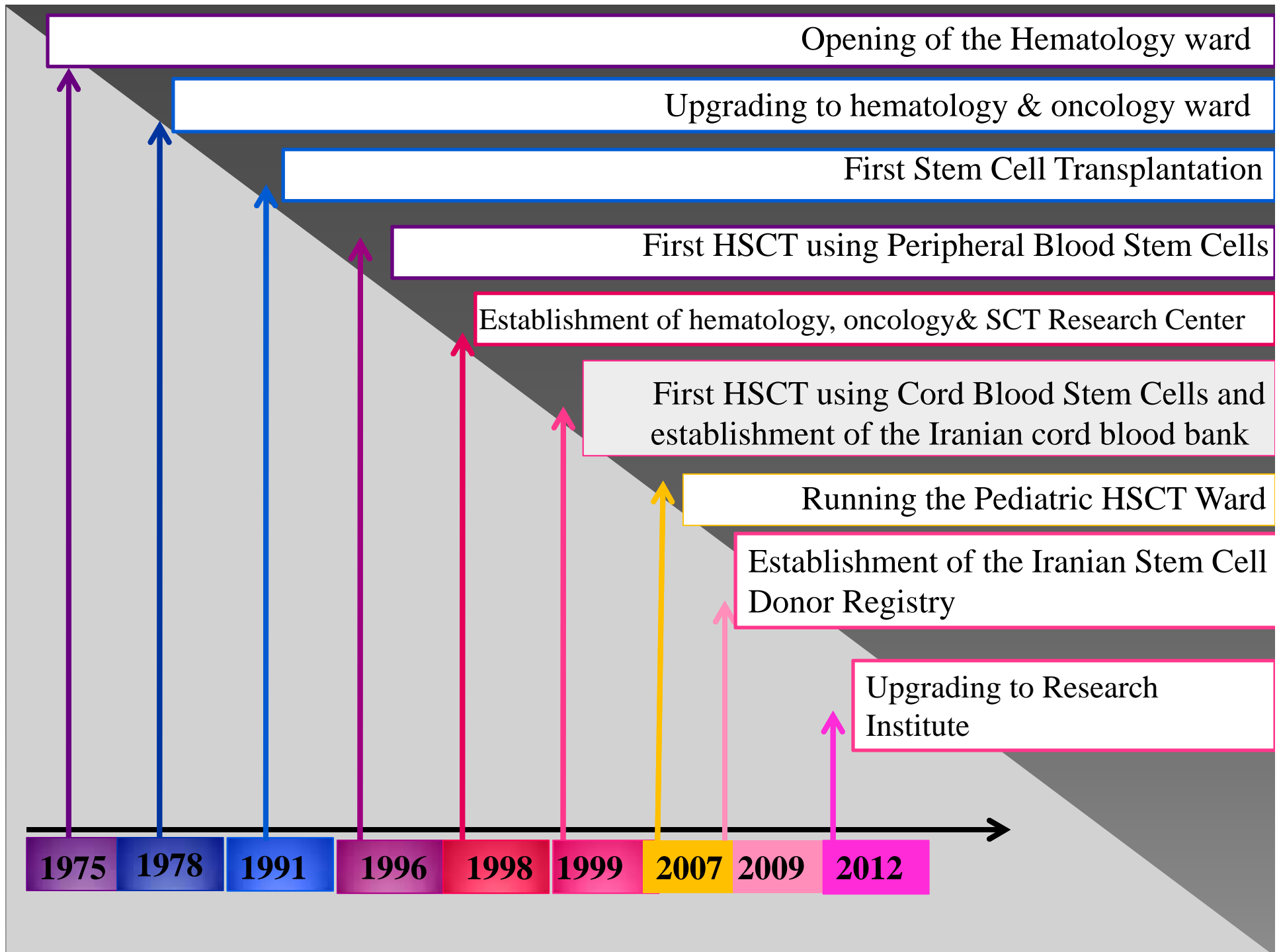
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Hematology-Oncology and Stem Cell Transplantation  
Research Center  
Tehran University of Medical Sciences

November 2013







# Hematology- Oncology & Stem cell Transplantation research Center

Include wards:

- › 3 BMT inpatient adult, 1 BMT inpatient children
- › 1 outpatient
- › 2 hematology and oncology wards
- › Hematology, oncology & post-transplantation clinics
- › Research laboratory
- › Research and Data management unit

## HSCT Centers in Iran

Number of HSCT  
till October 2013

HORC-SCT, Shariati Hospital (Tehran)

4392

Namazi Hospital (Shiraz)

804

Taleghani Hospital (Tehran)

320

Imam Khomeini Hospital (Tehran)

213

Afzali pour Hospital (Kerman)

91

Amir kola Hospital (Babol)

31

Imam Khomeini Hospital (Urmia)

14

Mahak Hospital (Tehran)

10

Montaserieh Hospital (Mashhad)

7

Sherkat Naft Hospital (Tehran)

6

**Total**

**5889**



# Stem cell transplantation for:

- Hematologic & non- Hematologic Malignancies
- Solid tumors
- Varies of hematologic disorders
- Immune system disorders
- Metabolic and Storage disorders
- Cell therapy for many different conditions

# Stem Cell Transplantation Indication

- 1- Hemoglobinopathies
- 2- Anemias (Severe Aplastic Anemia, Fanconi Anemia,..)
- 3- Disorders of Immune System (LAD, SCID, WAS, Kostmann, Job, Griscelli,...)
- 4- Metabolic and Storage Disease (Hurler, Gaucher,...)
- 5- Hematological Malignancies (AML , ALL , CML , MM , Lymphoma,...)
- 6- Myelofibrosis
- 7- Autoimmune diseases (RA, SLE, MS, Scleroderma,...)



# Stem Cell Transplantation Indication

8- Solid tumors: Breast cancer, Ovary, Testis, Ewing Sarcoma  
, Osteosarcoma, Neuroblastoma

9- Cell Therapy:

Post Infarction (CABG, Angioplasty)

Multiple Sclerosis

Cirrhosis

Avascular Necrosis of Femoral Head

Diabetes Mellitus II

GvHD treatment

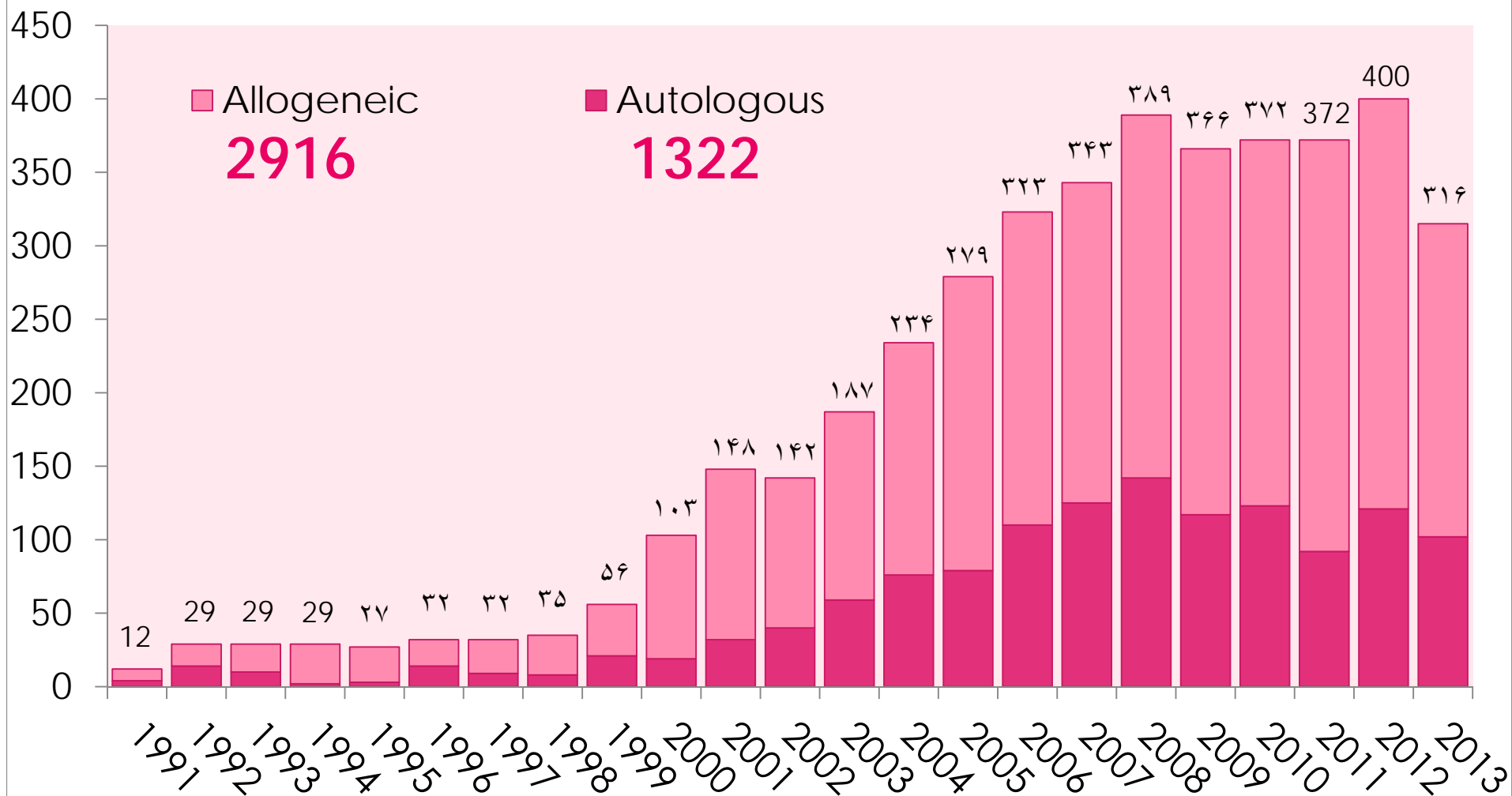
Systematic Lupus Erythematosus

Thalassemia

# Patients characteristics

<b>Total no of our patients</b>	<b>4392</b>
HSCT	4256
Retransplantation	61
Cell therapy	228
<b>Allogeneic</b>	<b>2916</b>
HLA- identical sibling	2638
HLA- matched other relatives	144
mismatched sibling/other related	76
unrelated	58
haploidentical	43
<b>Autologous</b>	<b>1322</b>
<b>Syngeneic</b>	<b>18</b>

# HSCT 1991- August 2013



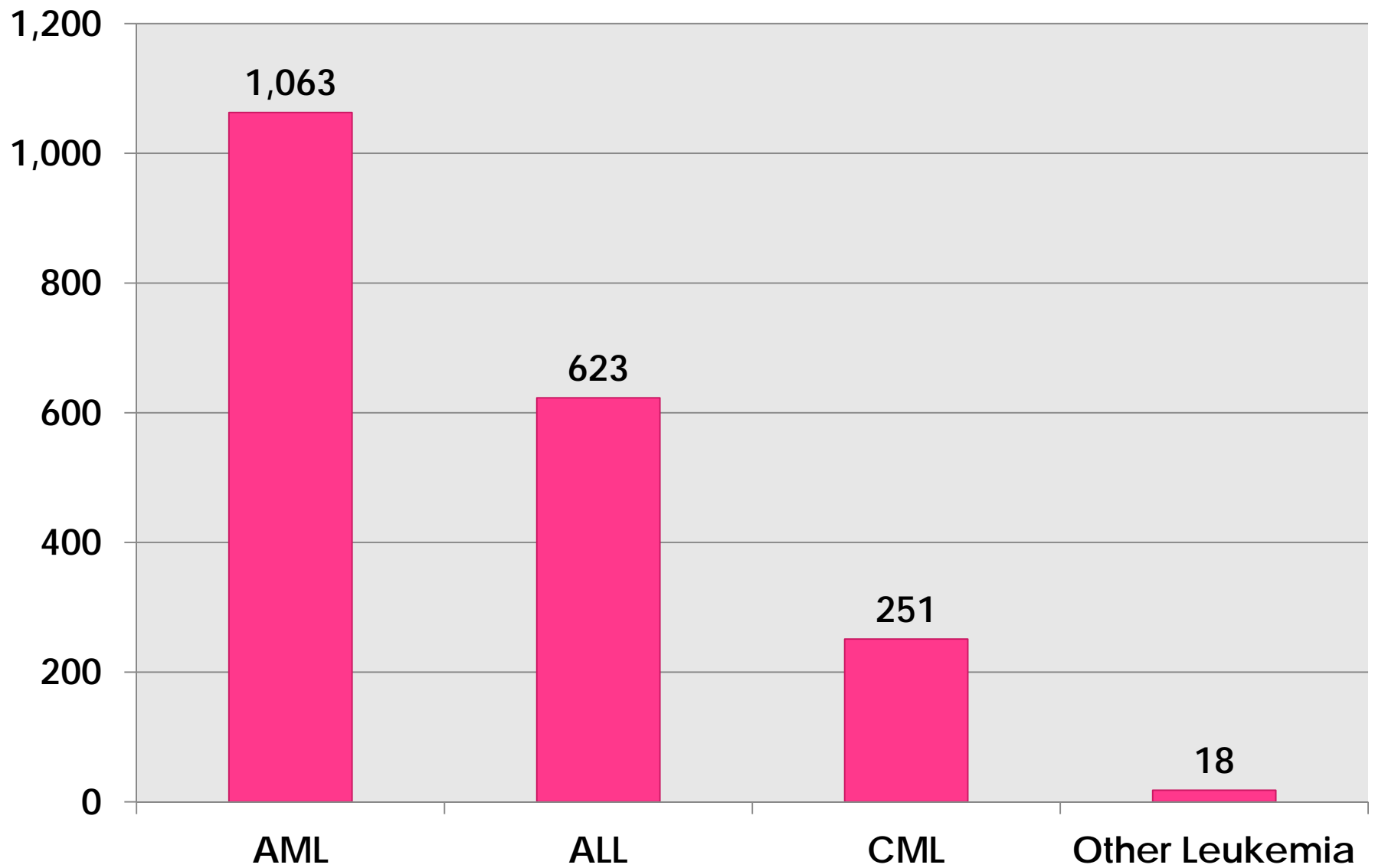
# Sources of HSCT

Sources	No
PB	3671
PB+ Mesenchymal	62
BM	514
BM+ Mesenchymal	33
CB	51
BM + PB	20
BM + PB+ Mesenchymal	3

# Cell therapies

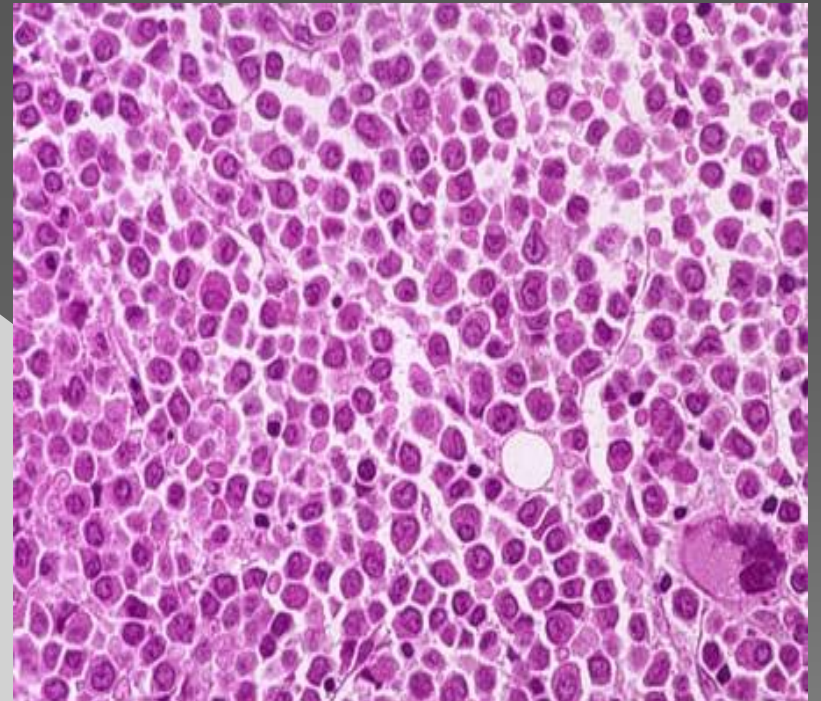
Diseases	No
Major thalassemia	92
Post MI	52
Cirrhosis	30
Diabetes Mellitus	21
Head of femur necrosis	13
Multiple sclerosis	11
GvHD treatment	9
Total	228

# Leukemias:1955



# AML

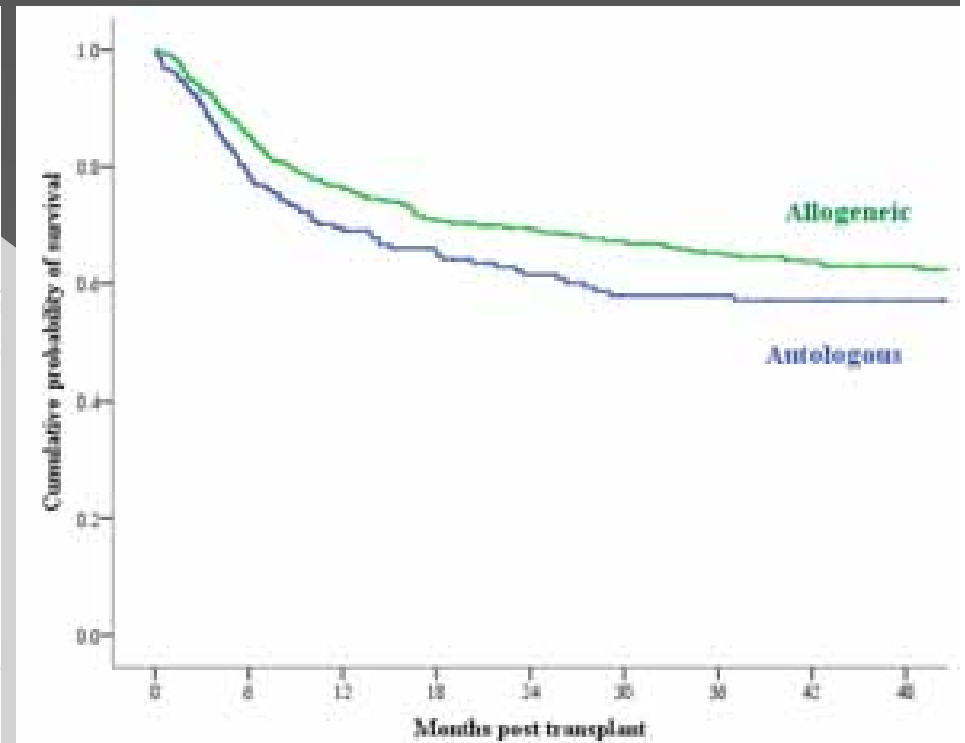
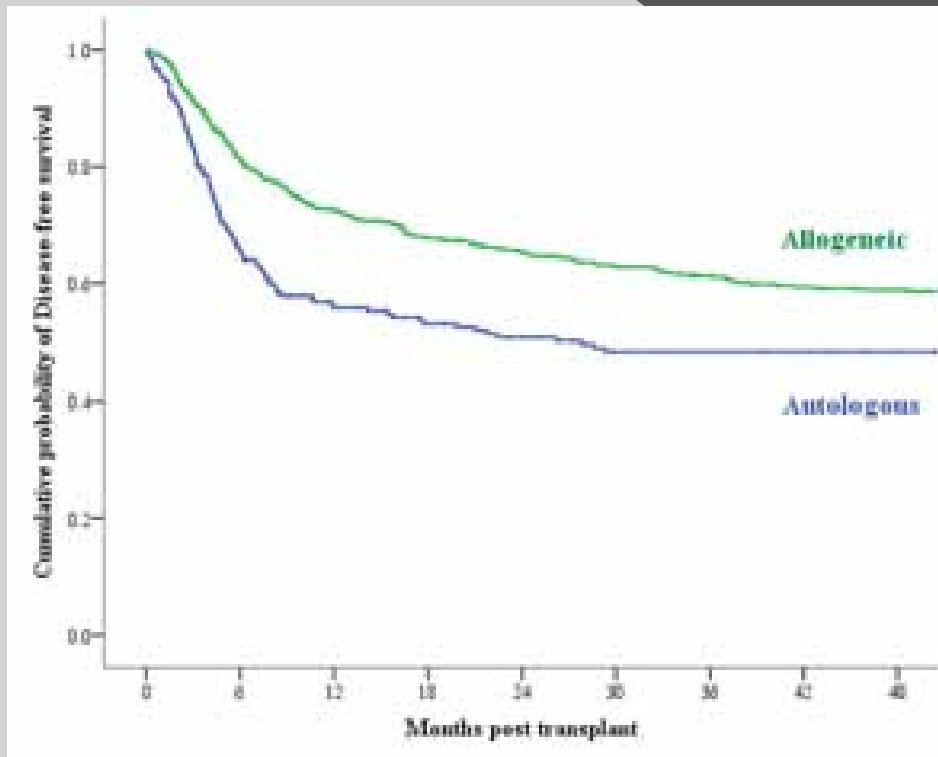
<b>Total</b>	<b>1063</b>
<b>Allogeneic</b>	<b>809</b>
<b>Autologous</b>	<b>249</b>
<b>Syngeneic</b>	<b>5</b>
<b>Alive</b>	<b>67%</b>



# AML

DFS

OS



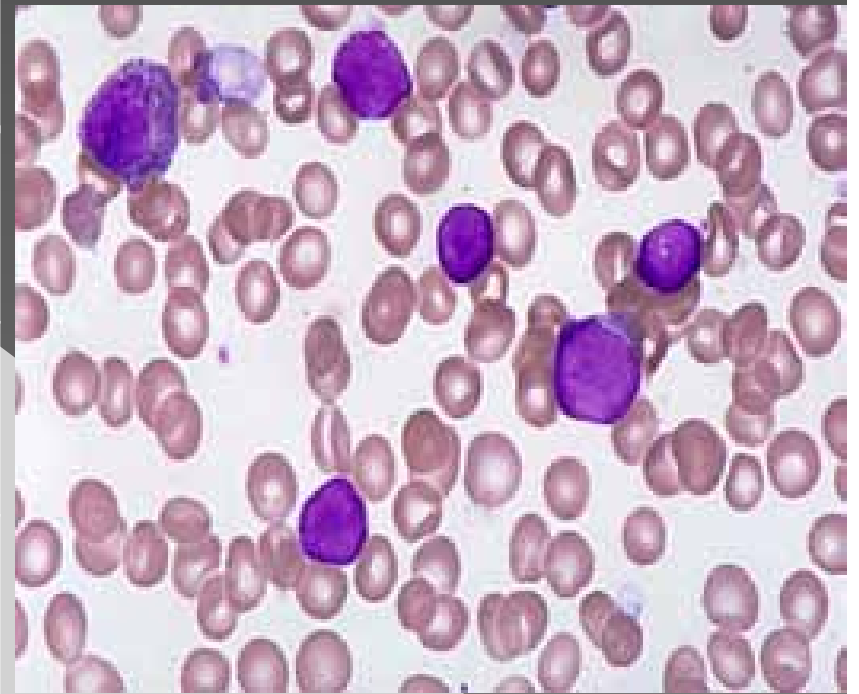
$p < 0.001$

$P = 0.096$



# ALL

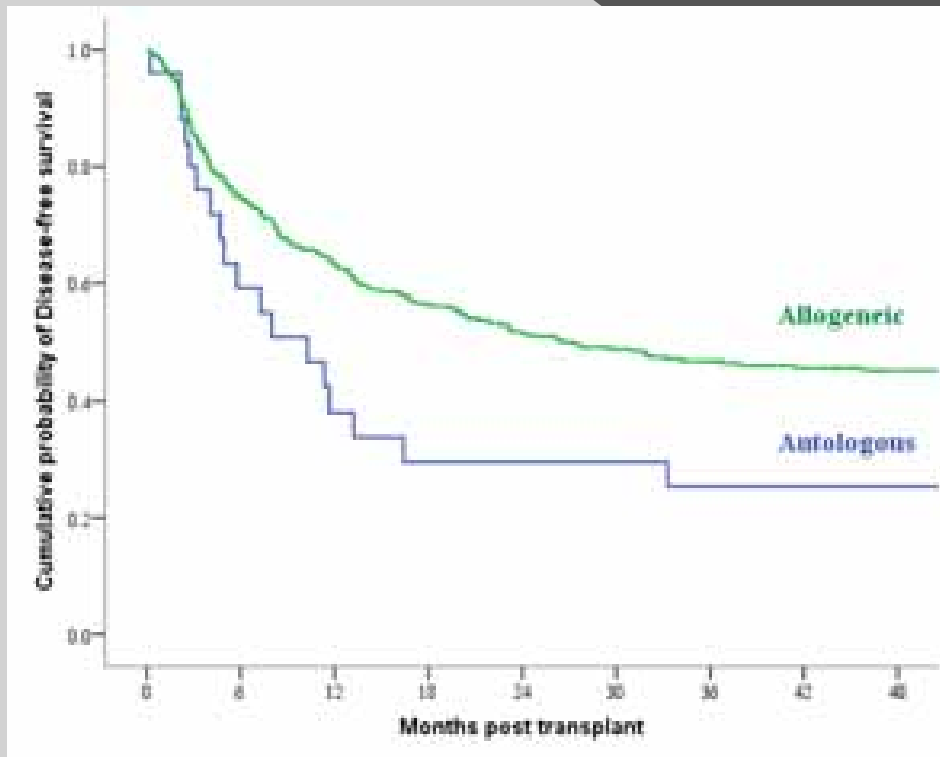
<b>Total</b>	<b>623</b>
<b>Allogeneic</b>	<b>588</b>
<b>Autologous</b>	<b>25</b>
<b>Syngeneic</b>	<b>10</b>
<b>Alive</b>	<b>57%</b>



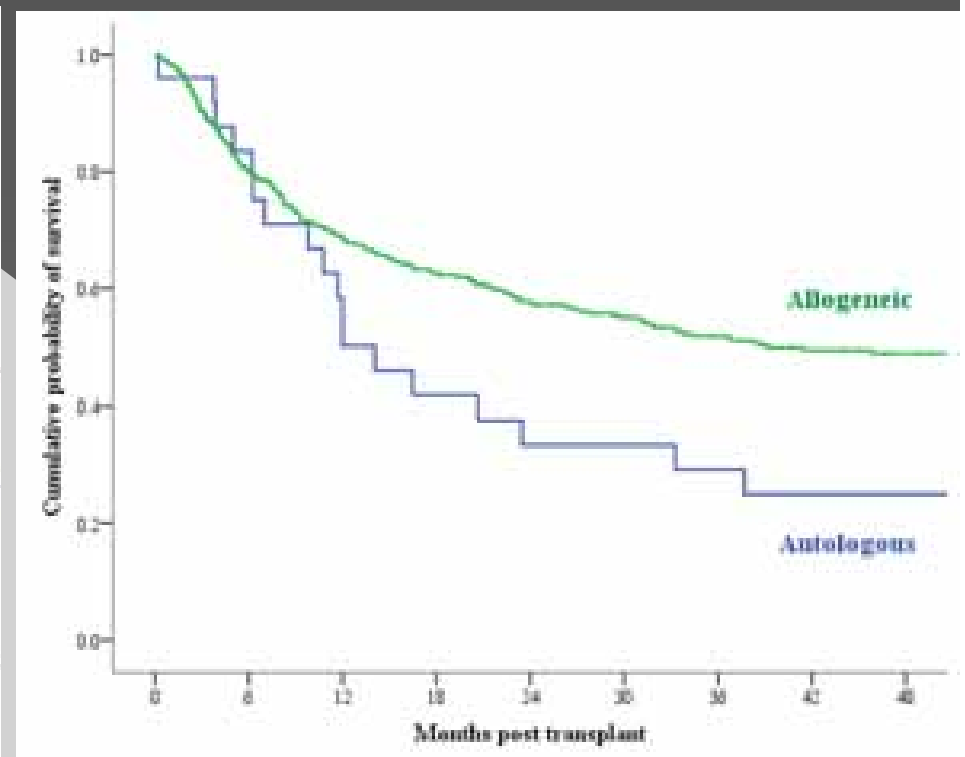
# ALL

DFS

OS



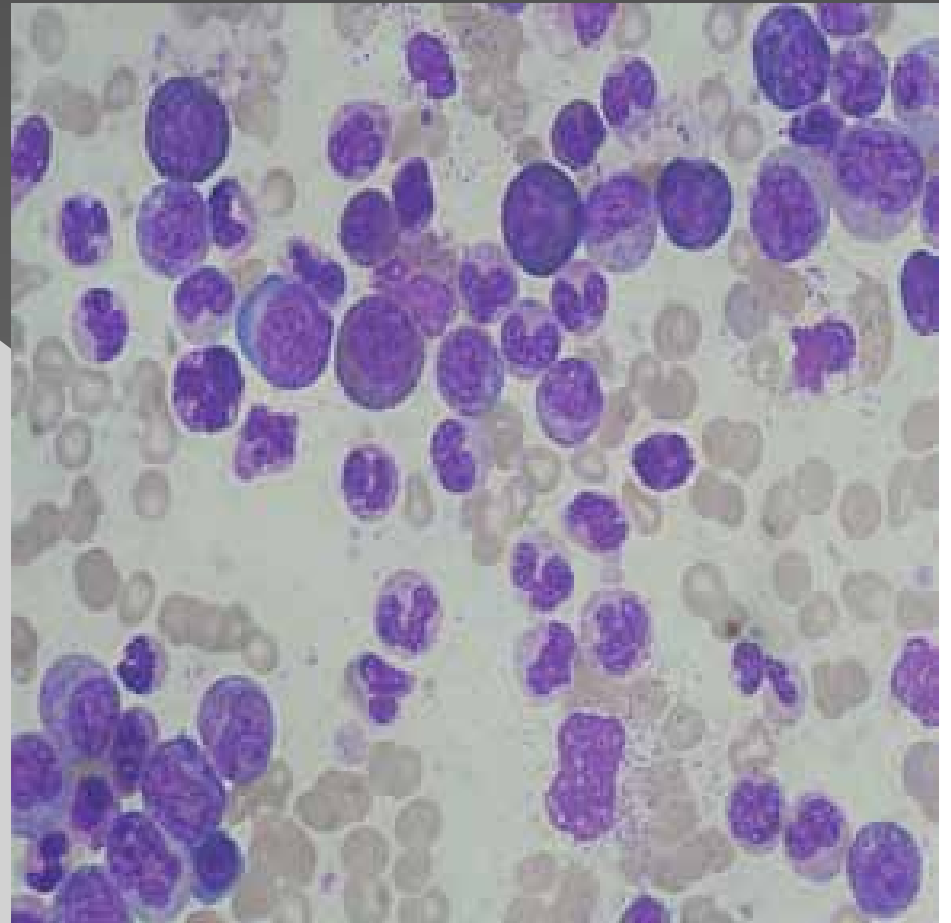
$p=0.038$



$p=0.047$

# CML

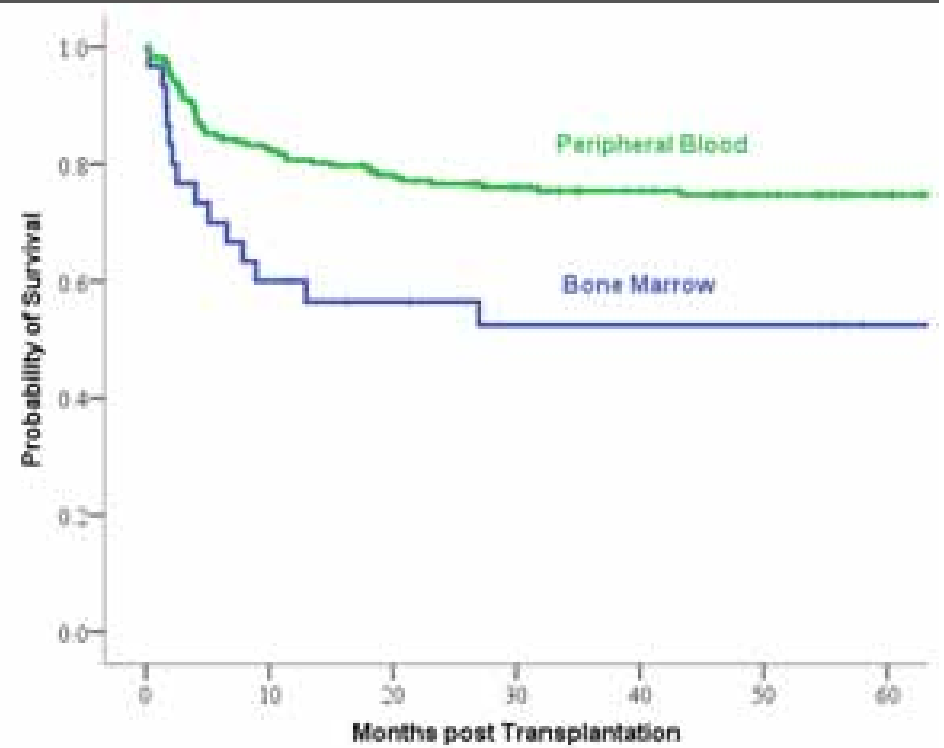
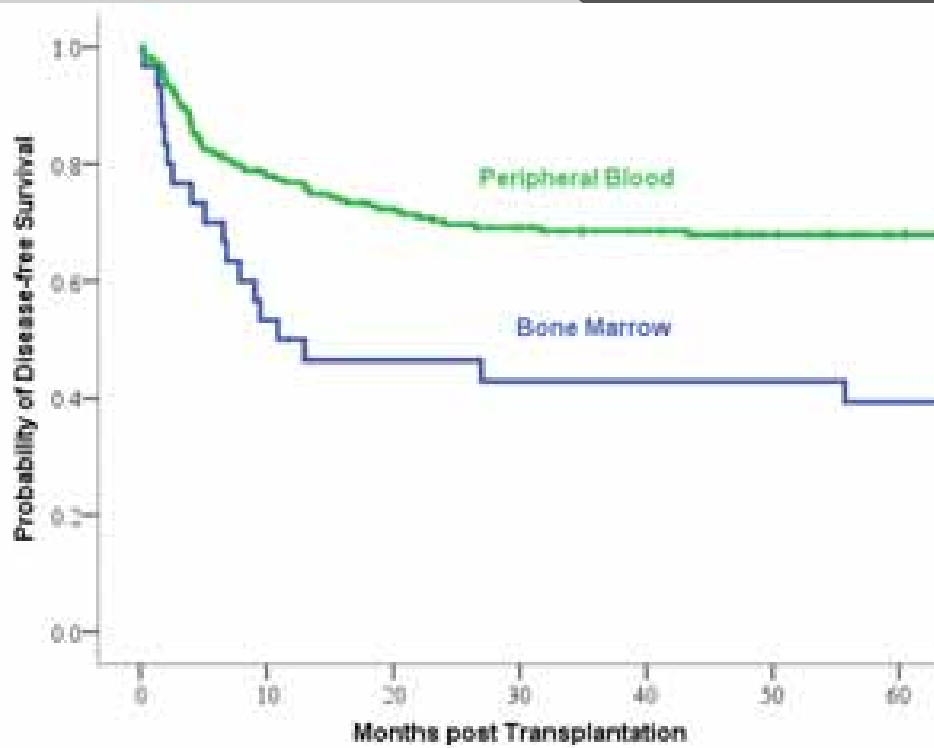
<b>Total Allogeneic</b>	<b>251</b>
<b>Peripheral Blood</b>	<b>221</b>
<b>Bone Marrow</b>	<b>30</b>
<b>Alive</b>	<b>71%</b>



# CML

DFS

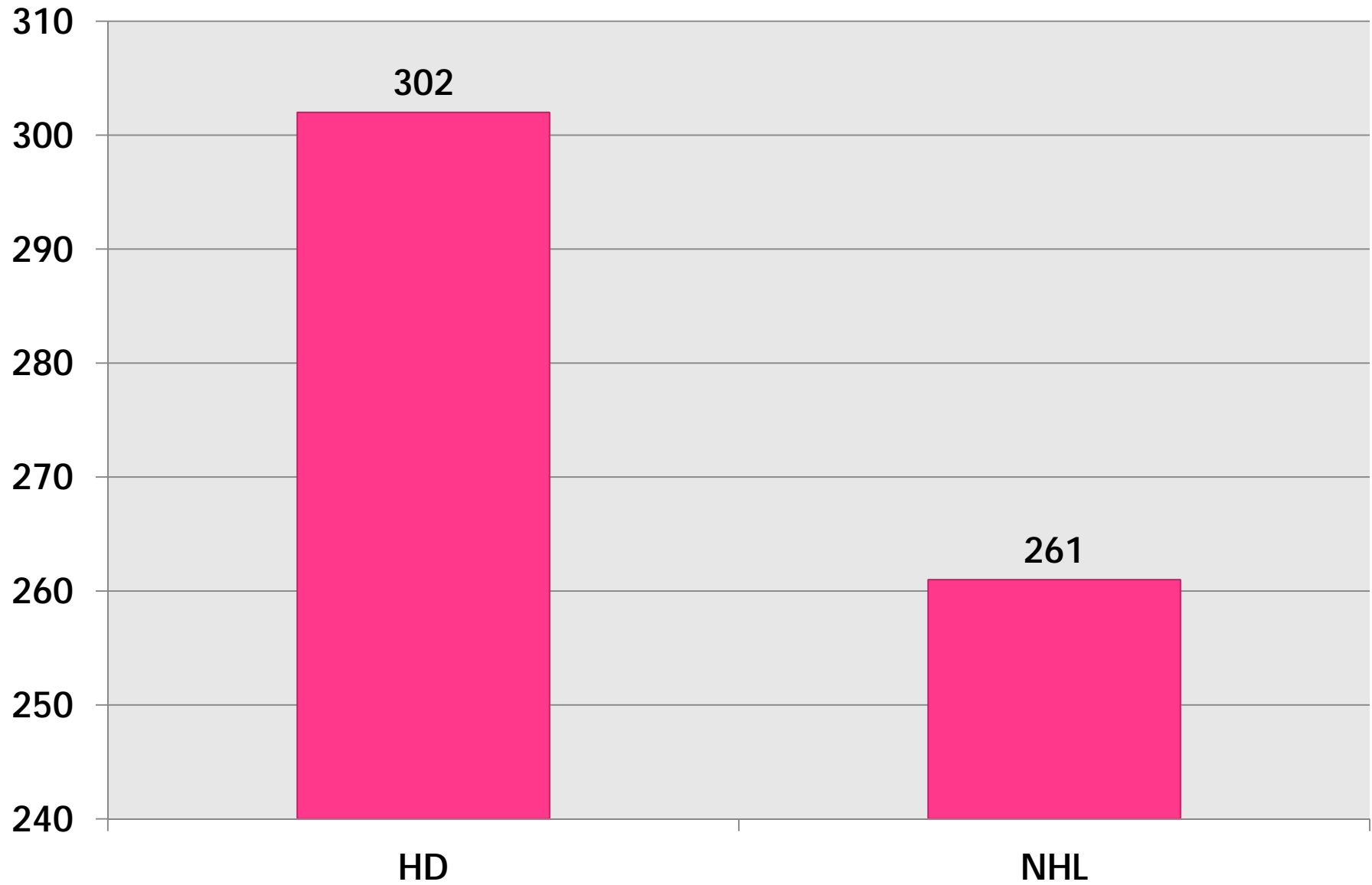
OS



$p < 0.001$

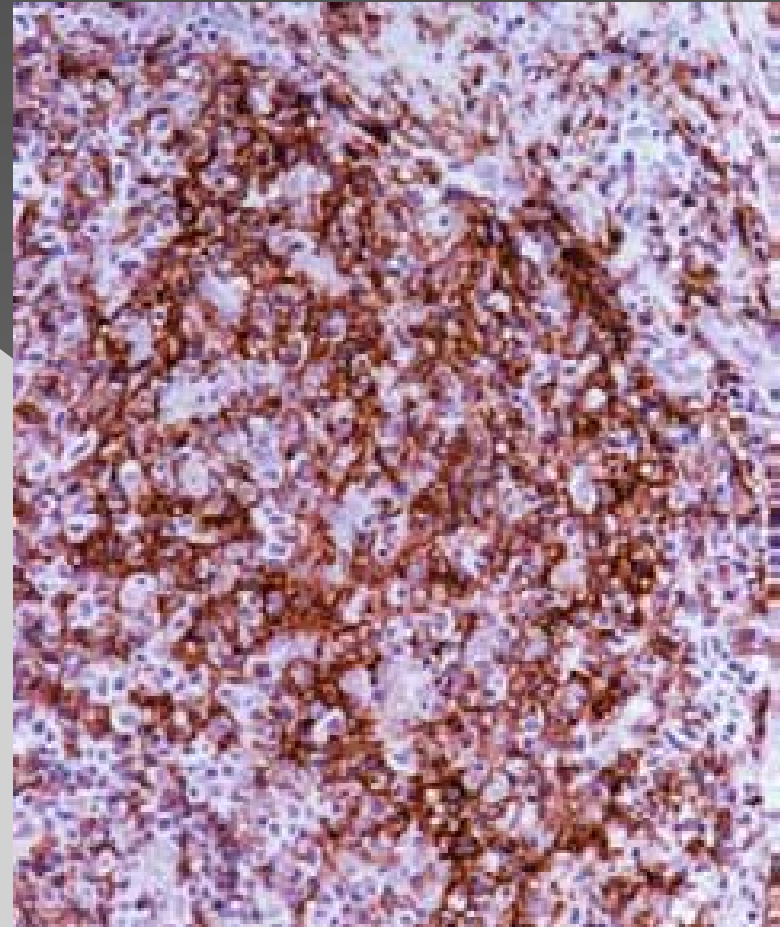
$p = 0.006$

# Lymphomas: 563



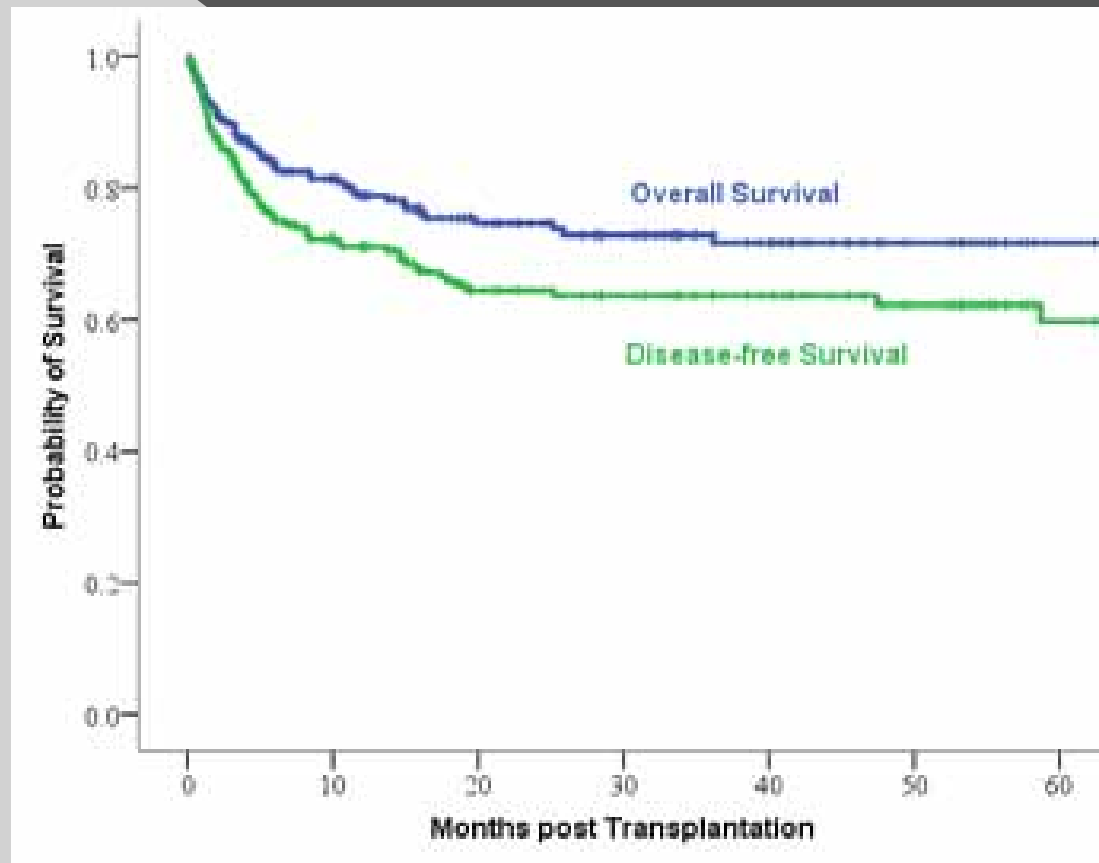
# Non- Hodgkin Lymphoma

<b>Total</b>	<b>261</b>
<b>Autologous</b>	<b>221</b>
<b>Allogeneic</b>	<b>39</b>
<b>Syngeneic</b>	<b>1</b>
<b>Alive</b>	<b>77%</b>



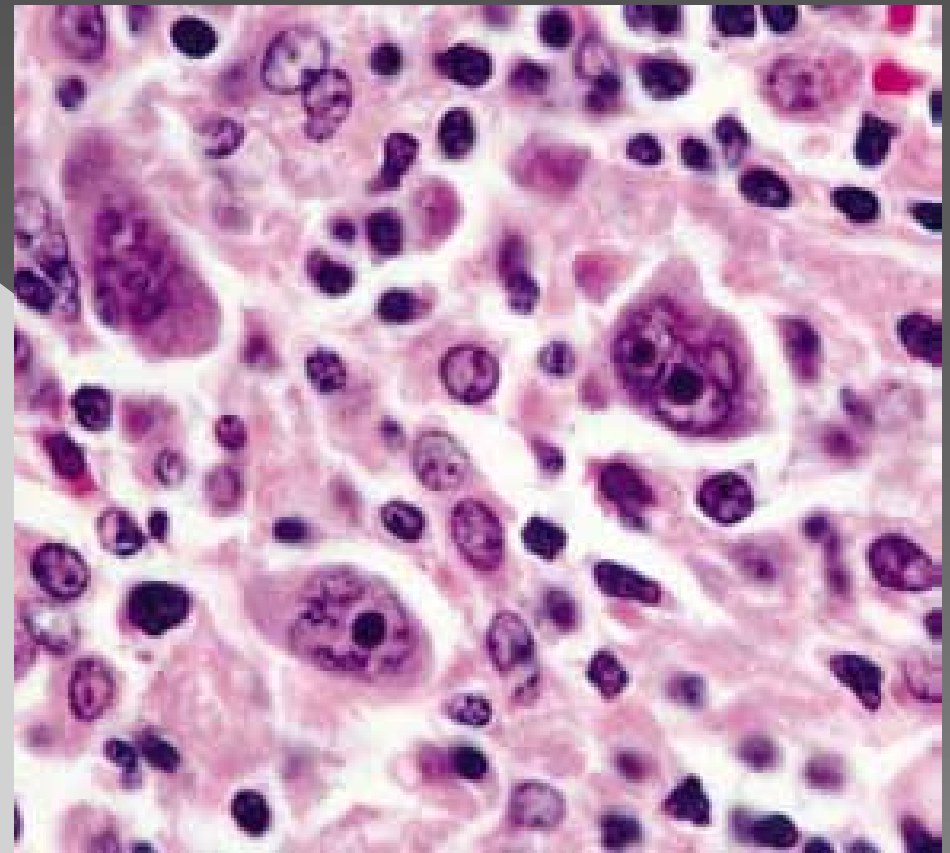
# NHL

## DFS & OS



# Hodgkin Disease

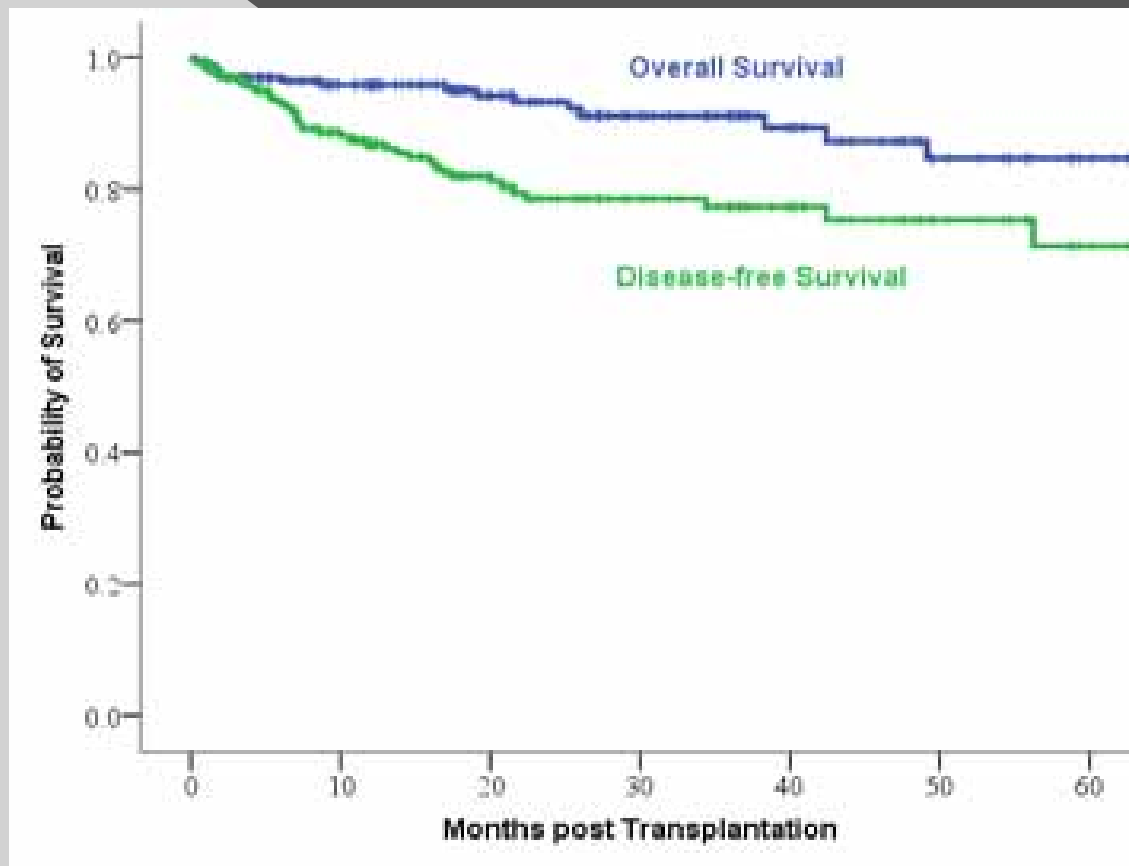
<b>Total</b>	<b>302</b>
<b>Autologous</b>	<b>296</b>
<b>Allogeneic</b>	<b>6</b>
<b>Alive</b>	<b>93%</b>



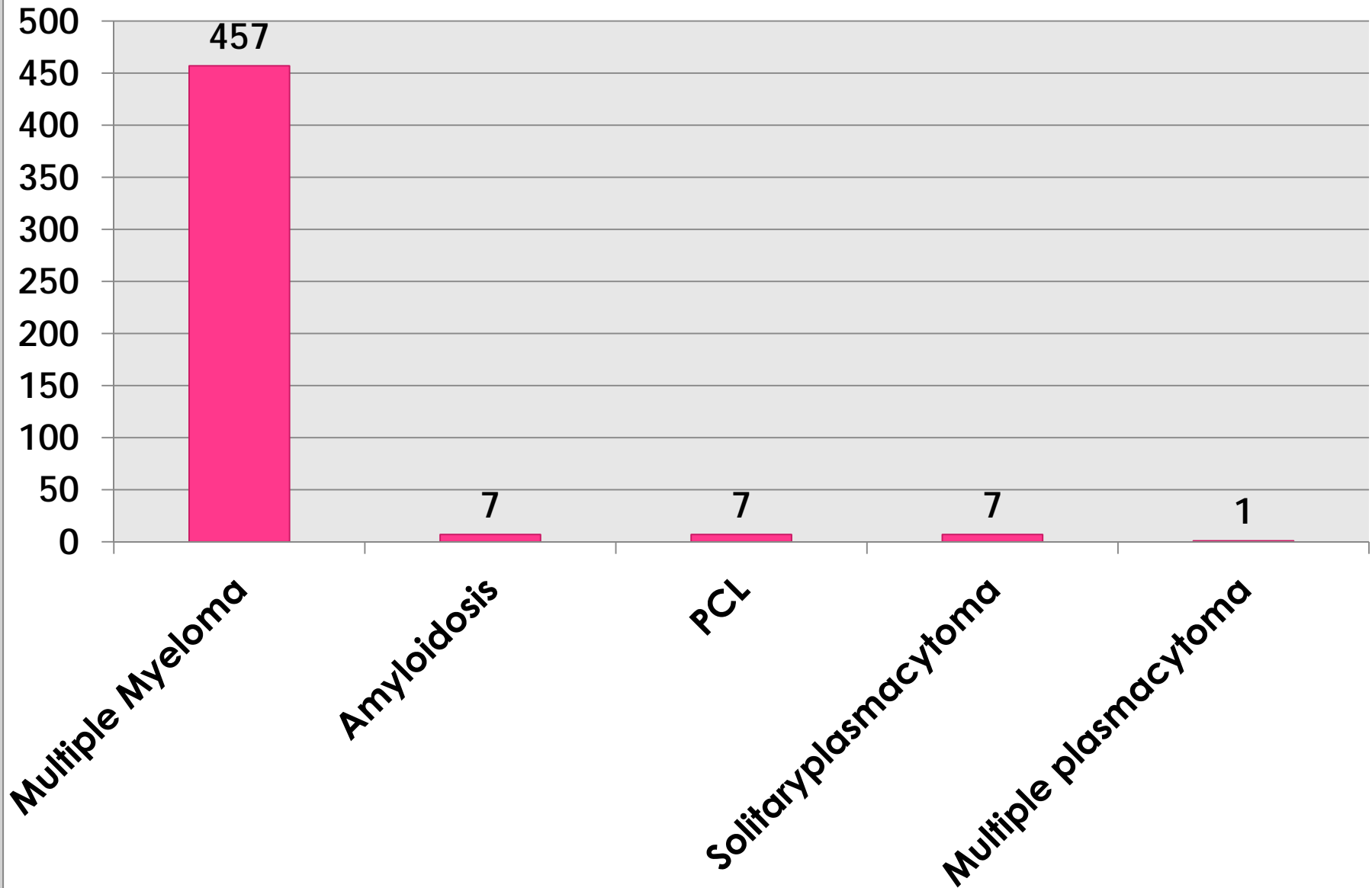


# Hodgkin Disease

## DFS & OS



## Plasma cell disorders: 479

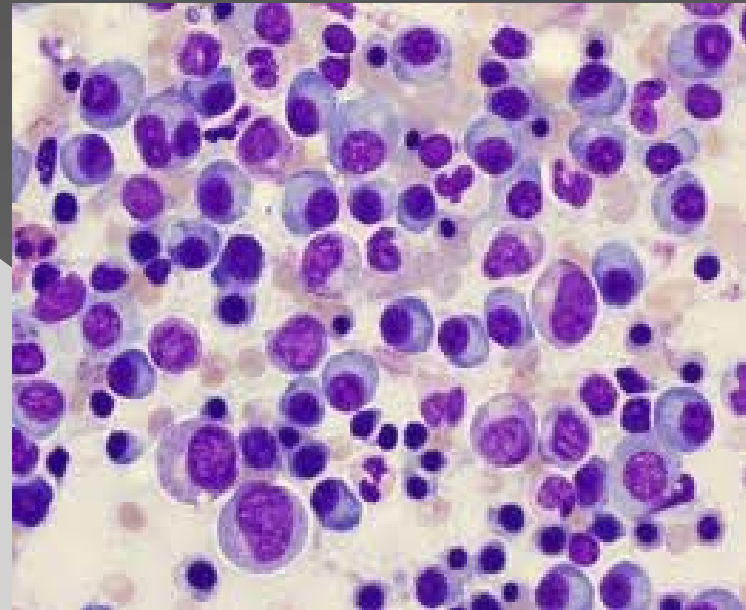


# Plasma cell disorders

<b>Total</b>	<b>479</b>
<b>Multiple Myeloma</b>	<b>457</b>
<b>Amyloidosis</b>	<b>7</b>
<b>Solitary Plasmacytoma</b>	<b>7</b>
<b>Plasma cell leukemia</b>	<b>7</b>
<b>Plasmacytoma</b>	<b>1</b>

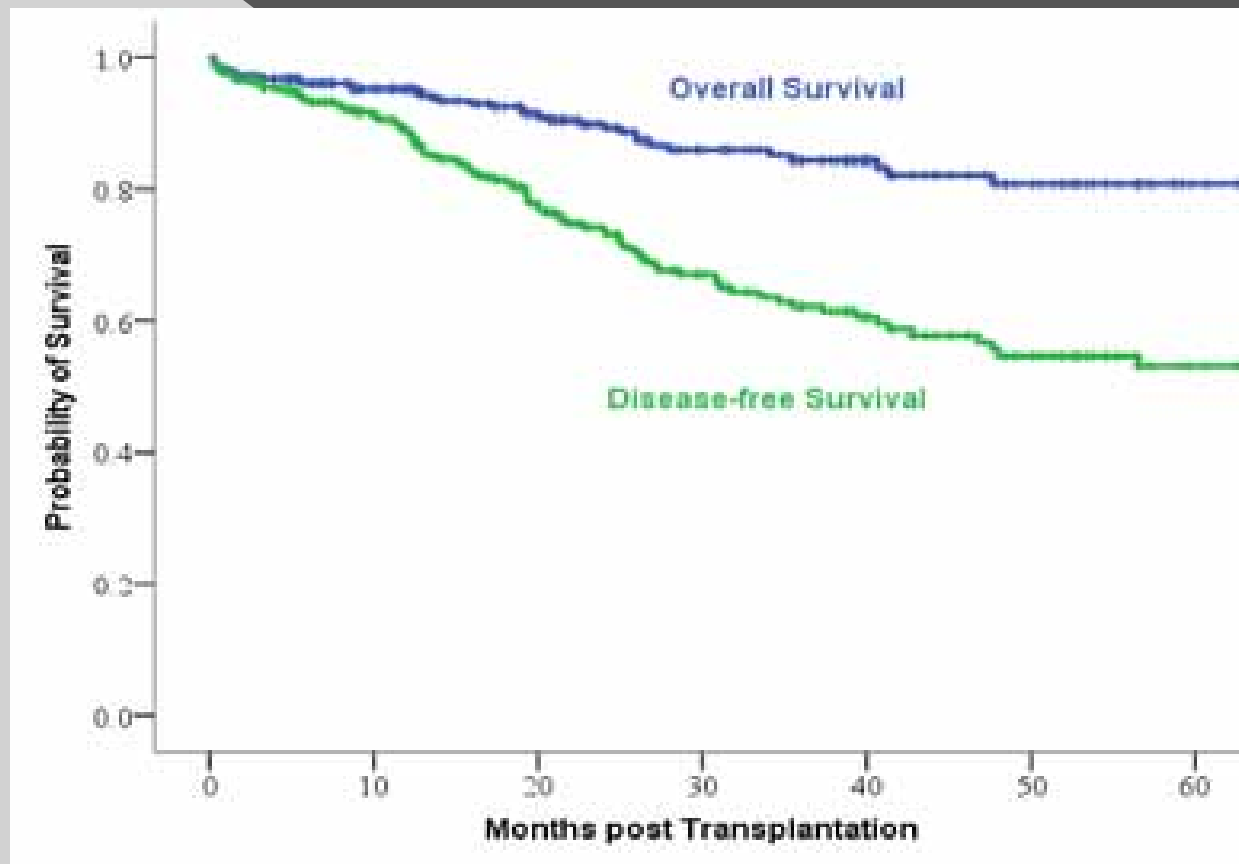
# Multiple Myeloma

<b>Total</b>	<b>457</b>
<b>Autologous</b>	<b>416</b>
<b>Allogeneic</b>	<b>41</b>
<b>Alive</b>	<b>88%</b>

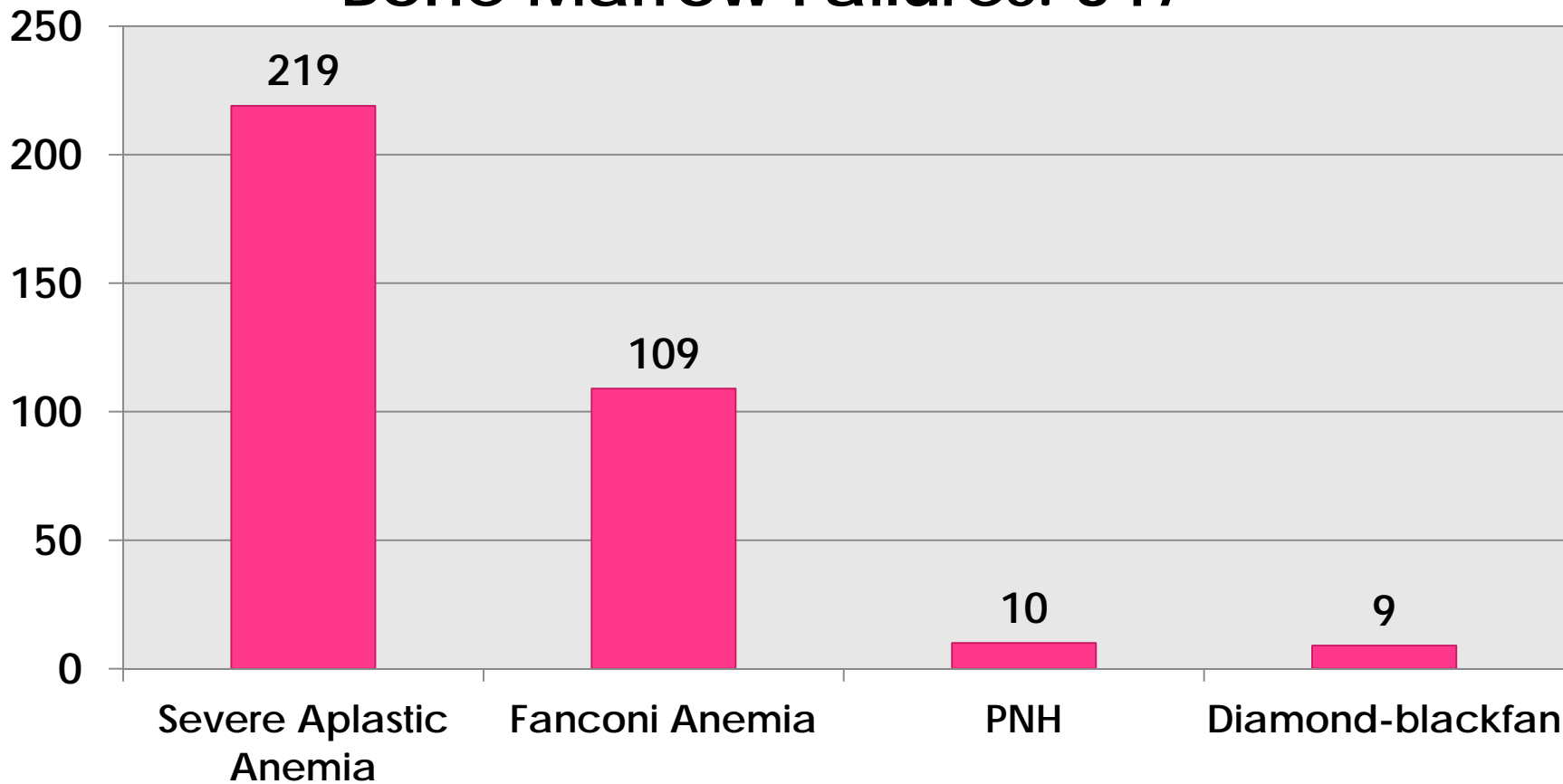


# Multiple Myeloma

DFS & OS



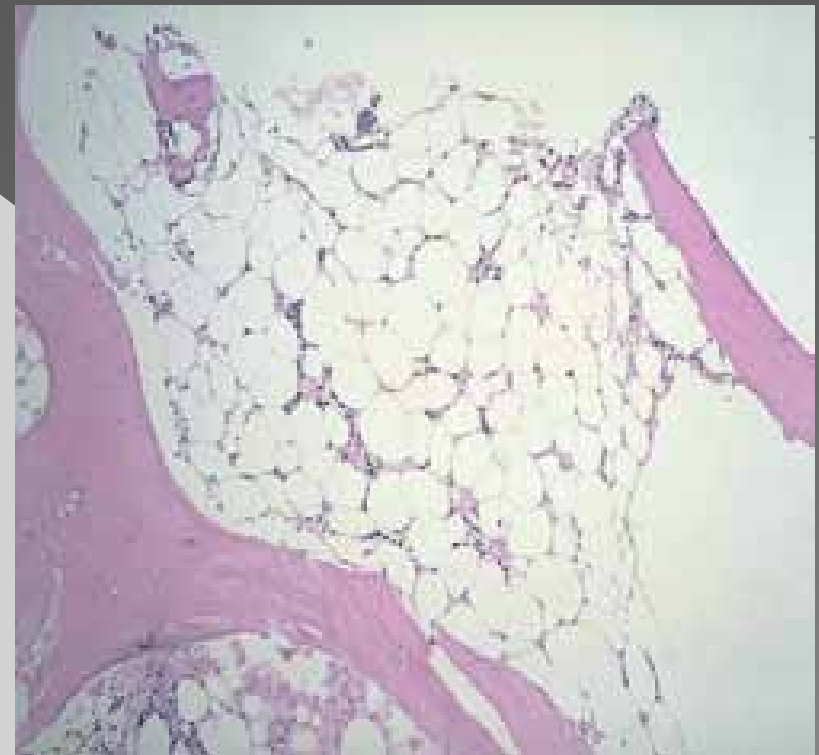
## Bone Marrow Failures: 347



# Aplastic Anemia & PNH

<b>Total Allogeneic AA</b>	<b>219</b>
<b>Peripheral Blood</b>	<b>161</b>
<b>Bone Marrow</b>	<b>54</b>
<b>PB + BM</b>	<b>3</b>
<b>Cord Blood</b>	<b>1</b>
<b>Alive</b>	<b>78%</b>

<b>Total Allogeneic PNH</b>	<b>10</b>
<b>Alive</b>	<b>80%</b>

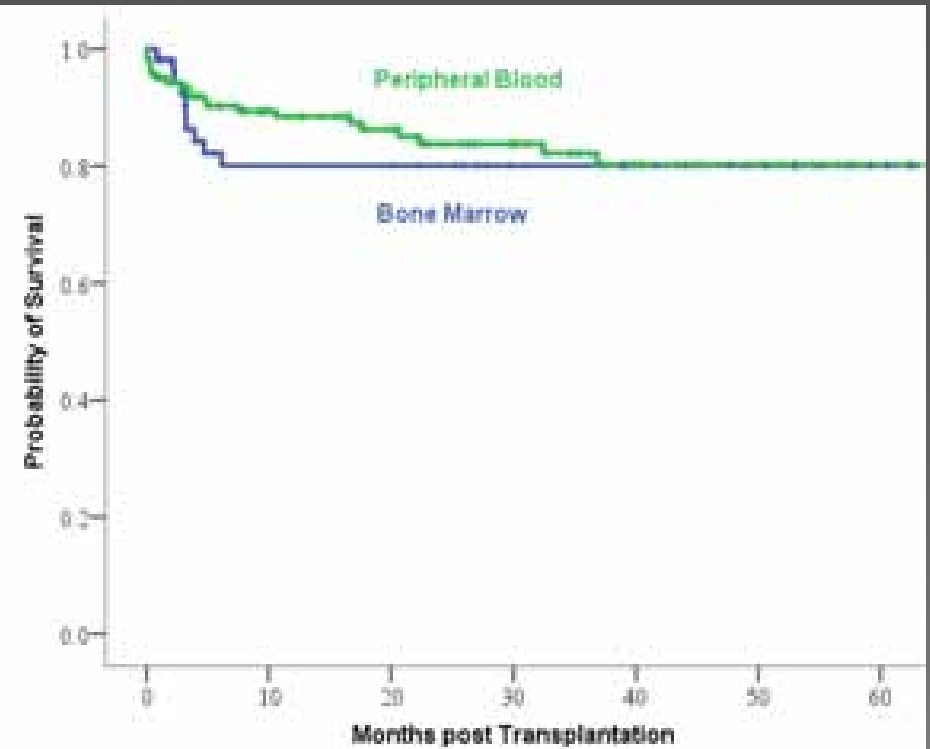
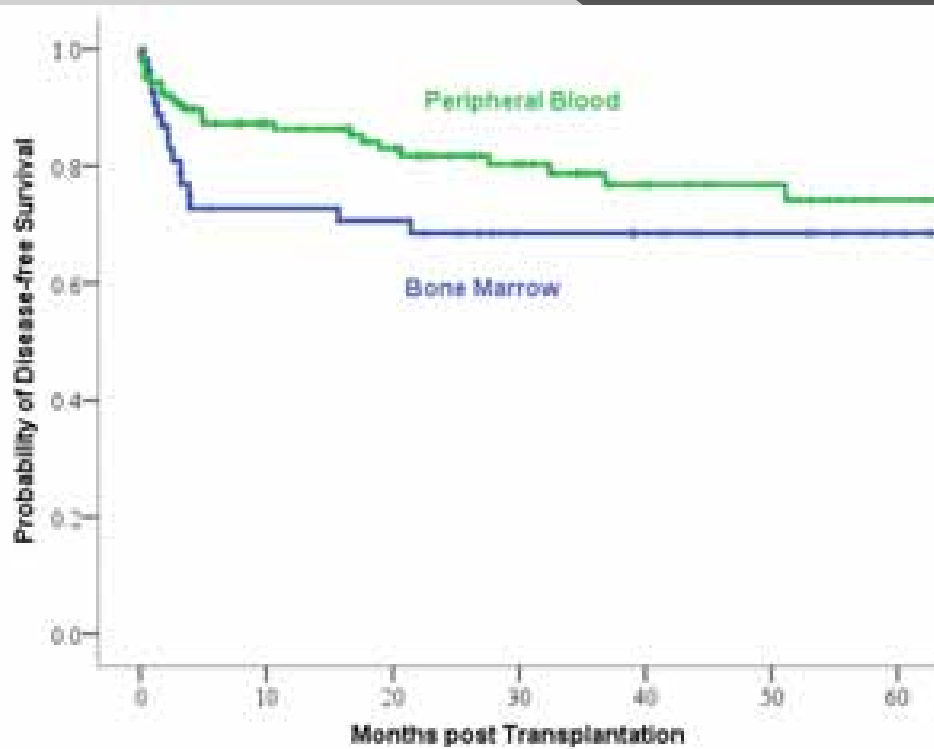


# Aplastic Anemia

PB vs. BM

DFS

OS



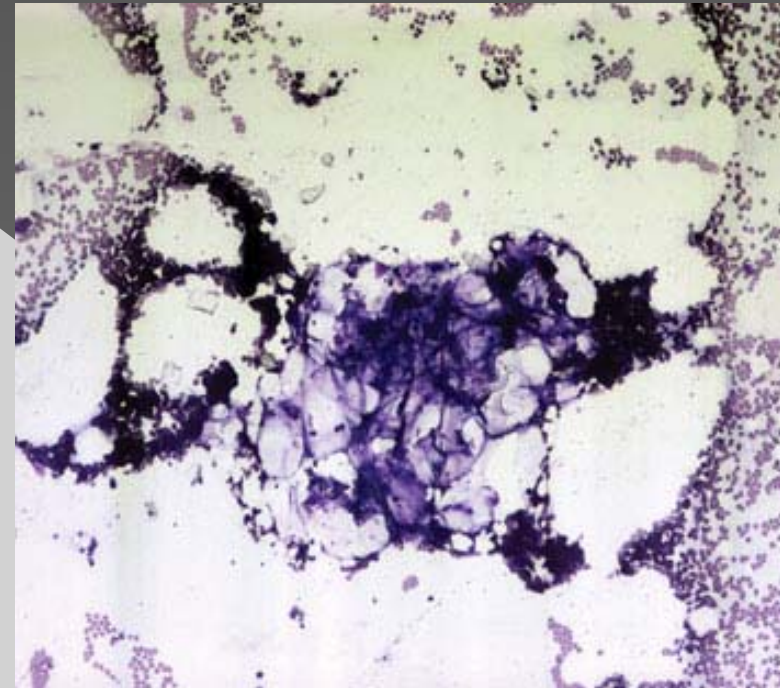
$p = 0.119$

$p = 0.707$



# Fanconi Anemia

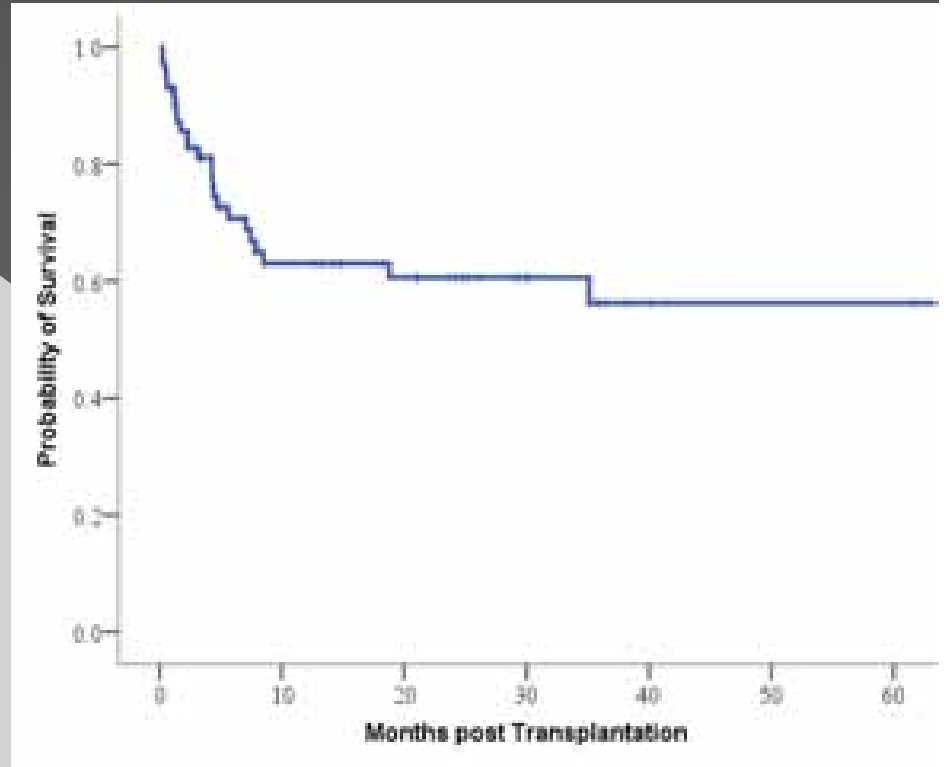
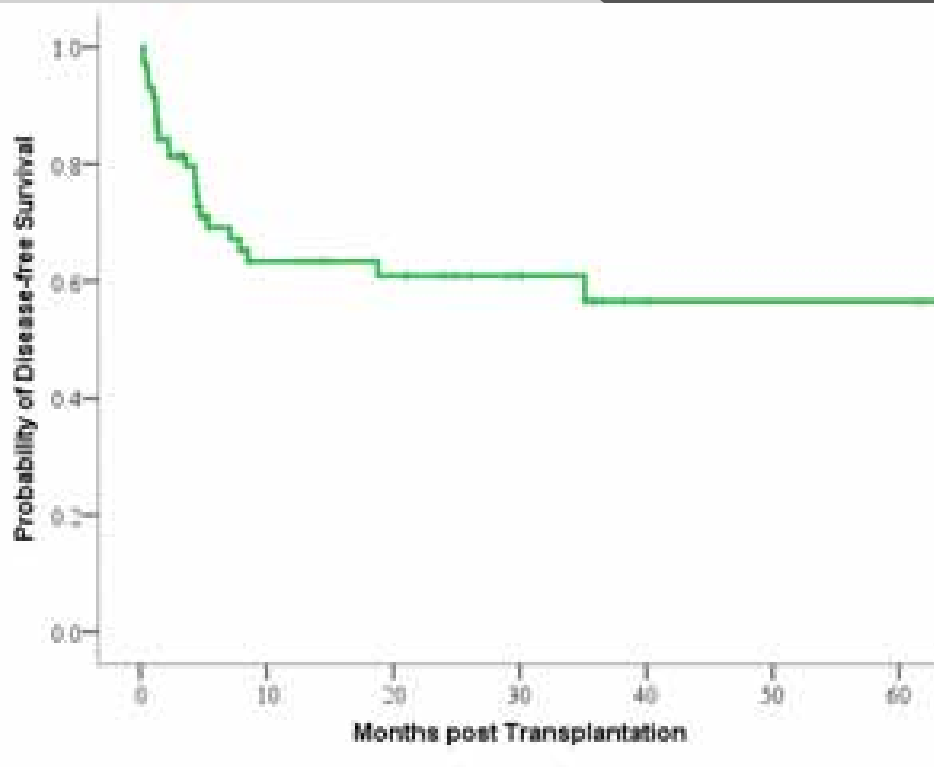
<b>Total</b>	<b>109</b>
Peripheral Blood	68
Bone Marrow	32
Cord Blood	4
PB + BM	1
<b>Alive</b>	<b>69%</b>



# Fanconi Anemia

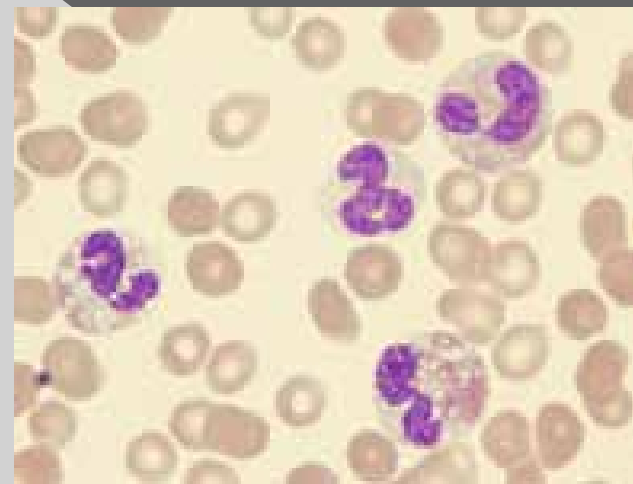
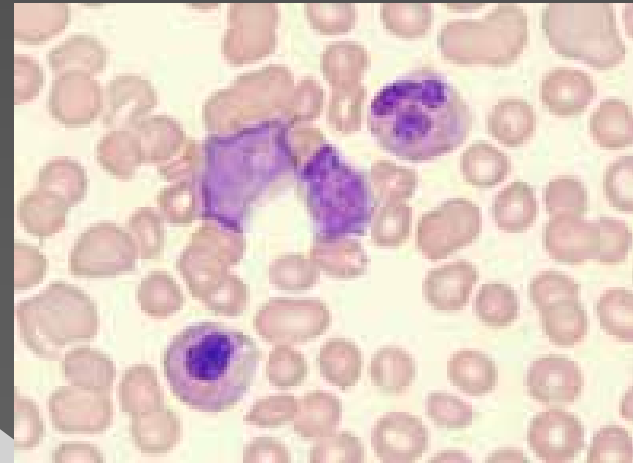
DFS

OS

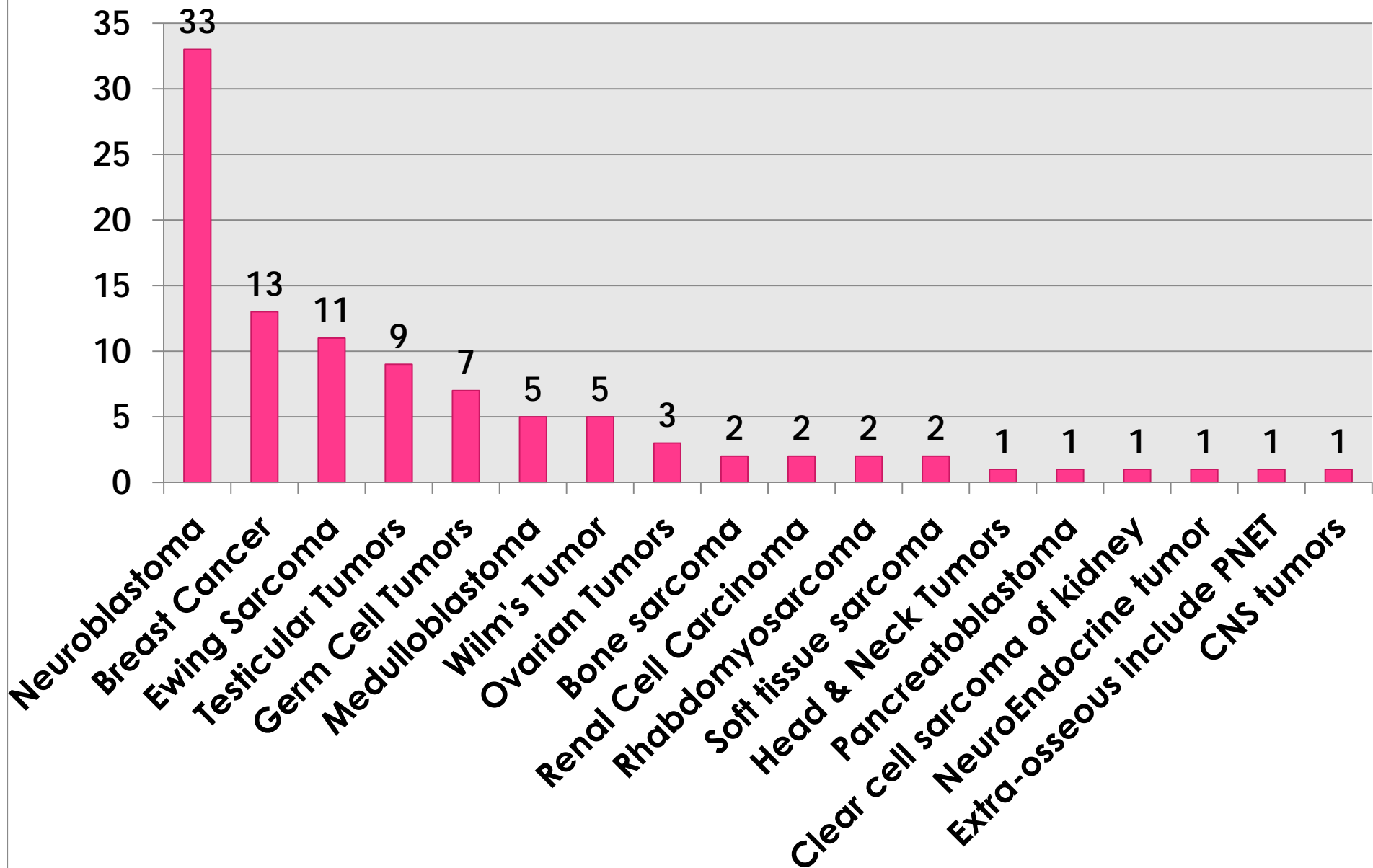


# Myelodysplasia

<b>Total</b>	<b>64</b>
<b>PB</b>	<b>63</b>
<b>BM</b>	<b>1</b>
<b>Alive</b>	<b>65%</b>



# Solid Tumors :100



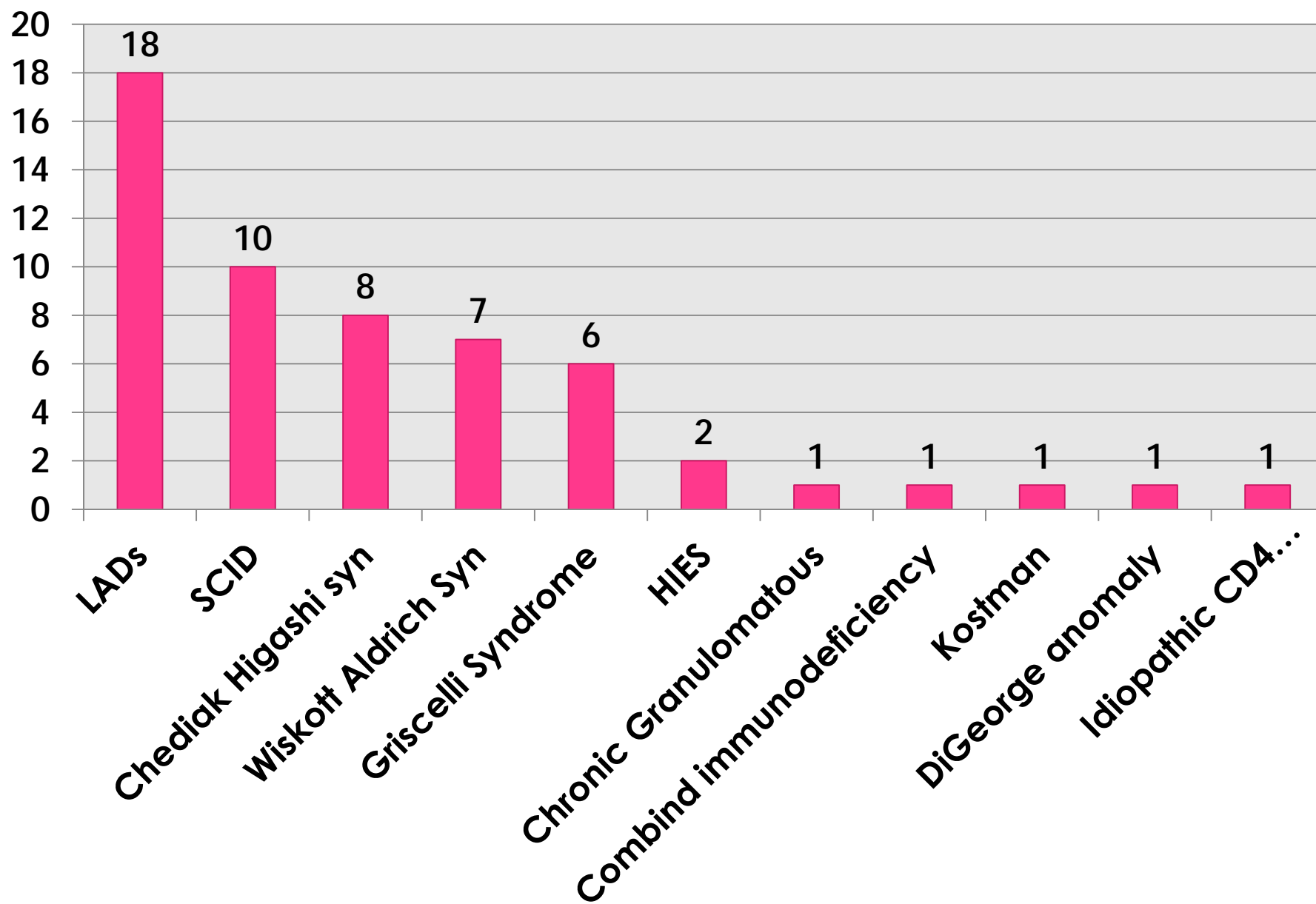
# Solid tumors

Total	97
Neuroblastoma	32
Breast cancer	13
Ewing sarcoma	9
Testicular cancer	9
Germ cell tumors	7
Medulloblastoma	5
Wilms tumor	5
Ovarian epithelial cell cancer	3
Renal cell carcinoma	2

## Solid tumors (cont.)

Total	97
Bone sarcoma	2
Soft tissue sarcoma (kidney)	2
Rhabdomyosarcoma	2
Clear cell sarcoma (kidney)	1
Neuroendocrine tumor	1
Nasopharyngeal carcinoma	1
Pancreatoblastoma	1
Extra-osseous include PNET	1
CNS tumors (include CNS PNET)	1

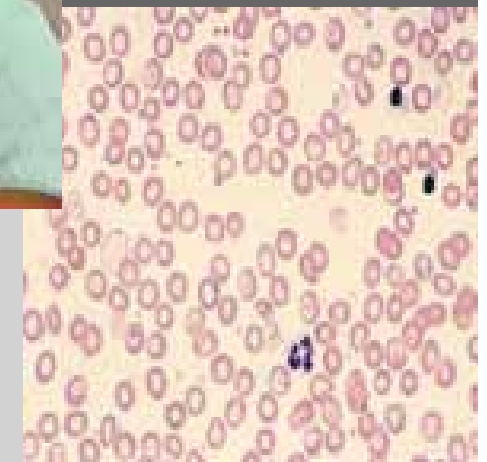
## Primary immunodeficiency: 56



# Major Beta- Thalassemia

<b>Total</b>	<b>613</b>
PB	309
BM	198
CB	10
PB+ Mesenchymal	62
BM + Mesenchymal	30
PB + BM + Mesenchymal	3
PB + BM	1
<b>Classification</b>	
Class I	163
Class II	230
Class III	220

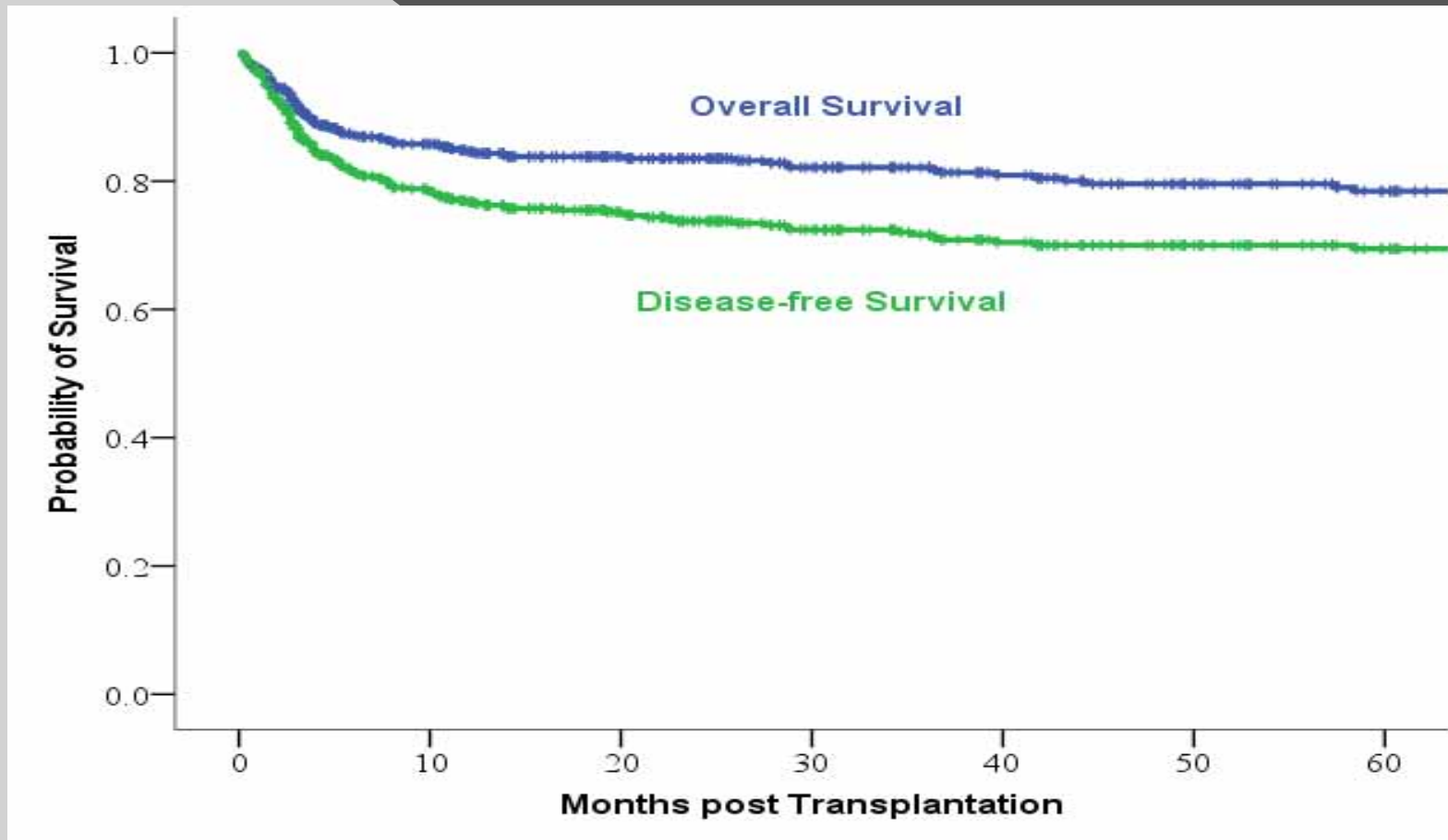
<b>Thalassemia</b>	<b>605</b>
Sickle cell thalassemia	4
Sickle cell disease	2





# Major Beta- Thalassemia

DFS & OS

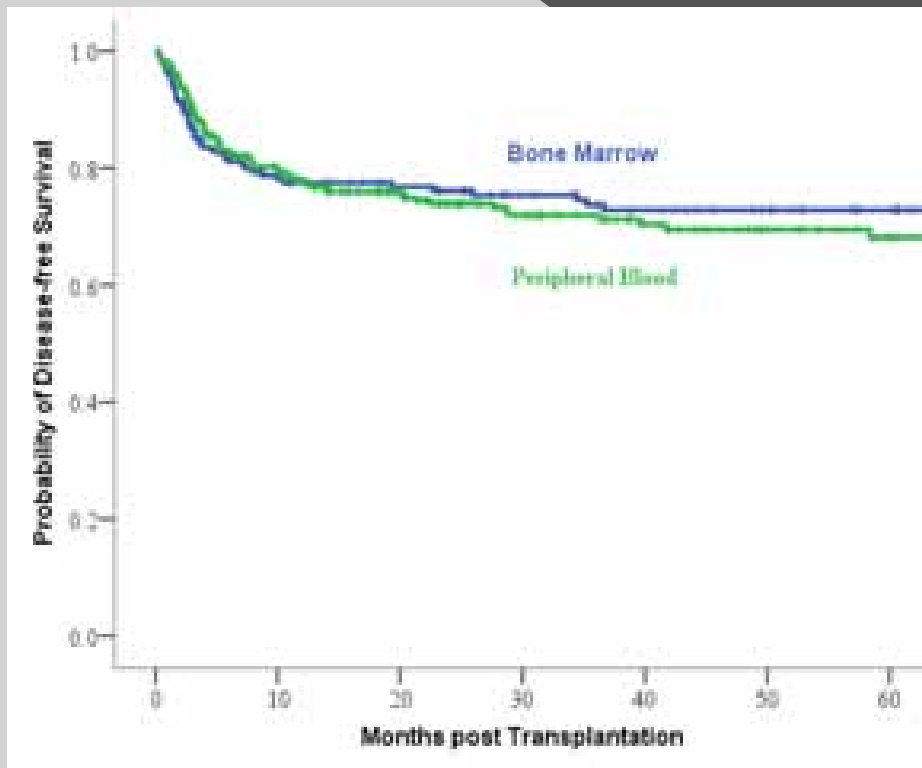


# Major Beta- Thalassemia

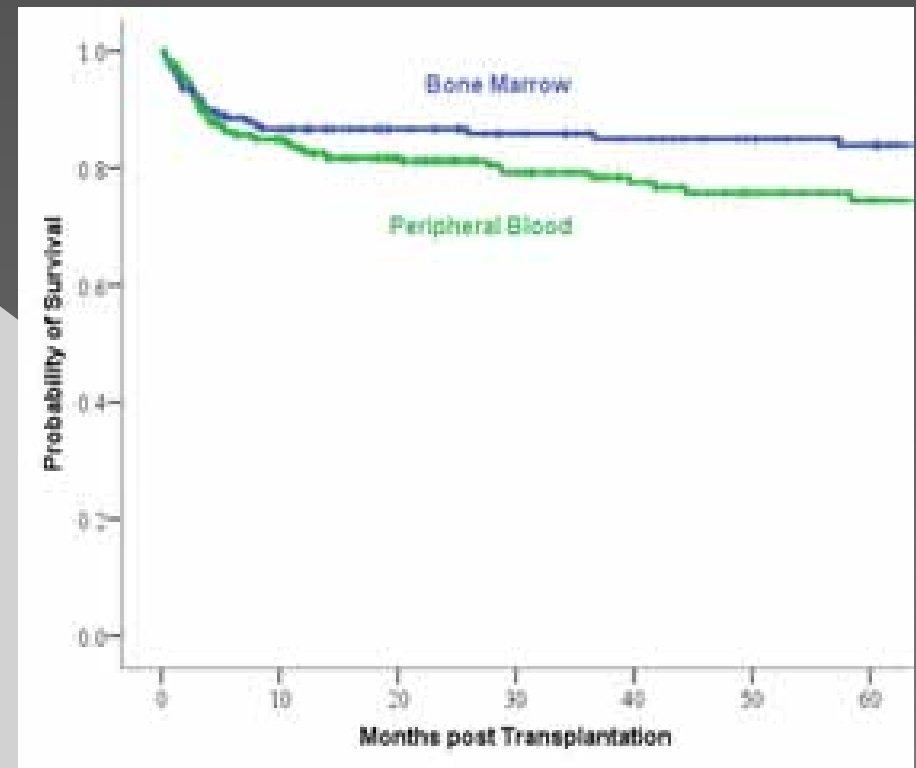
BM vs. PB

DFS

OS



$p = 0.697$



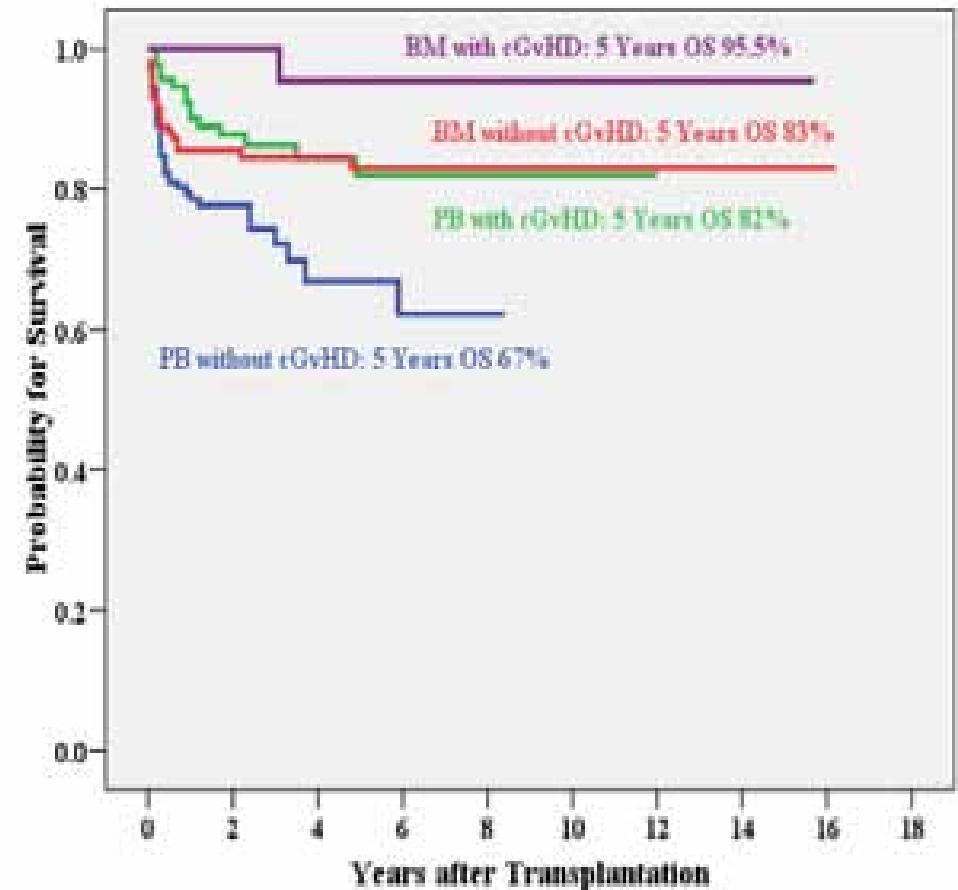
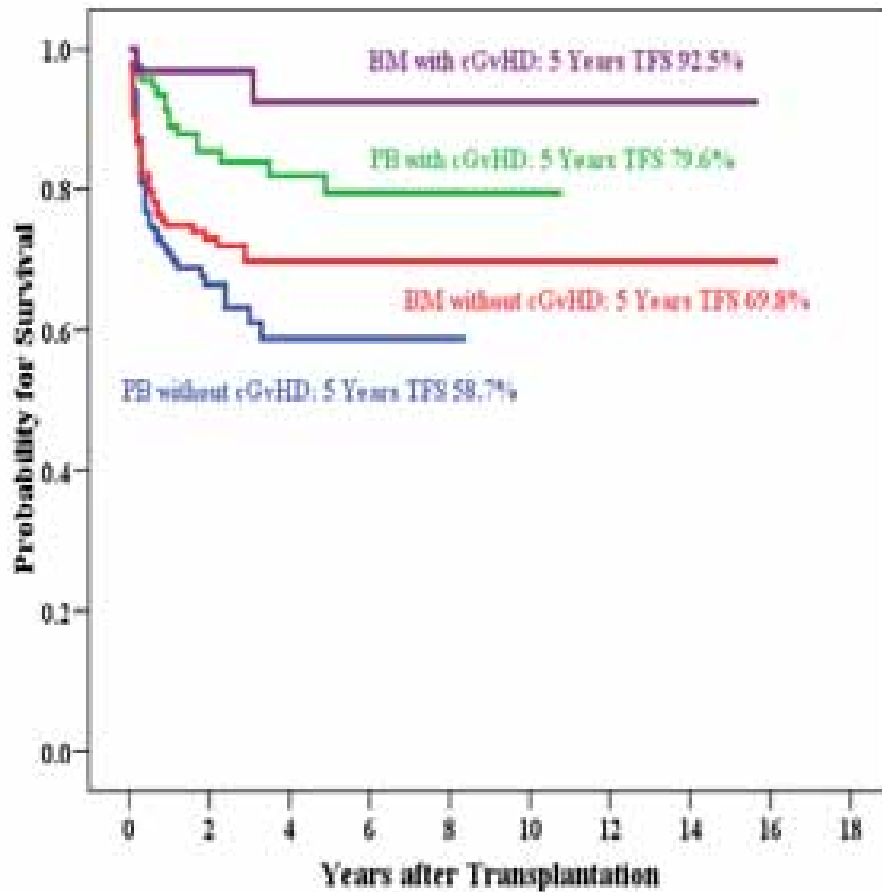
$p = 0.065$

# Major Beta- Thalassemia

## BM Vs. PB Regarding GvHD

DFS

OS



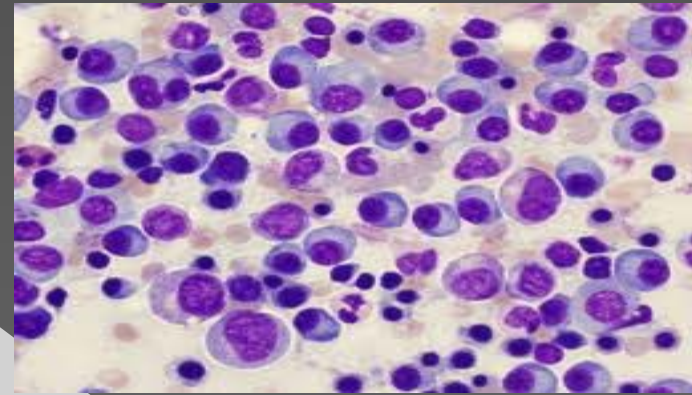
# Other diseases

Total	51
Osteopetrosis	22
Chronic Lymphocytic Leukemia	7
Mucopolysaccharidosis	6
Mucopolipidosis	4
Systemic Sclerosis	4
Familial Erythrophagocytic Lymphohistiocytosis (FELH)	4
Histiocytosis	2
Mitochondrial Neurogastrointestinal Encephalomyopathy (MNGIE)	1
Multiple Sclerosis	1

# Outpatients ward

First transplantation was done in Dec 2005  
All of the were Autologous PB

Diseases	No
Multiple Myeloma	99
Hodgkin	24
NHL	10
AML	6
Total	139

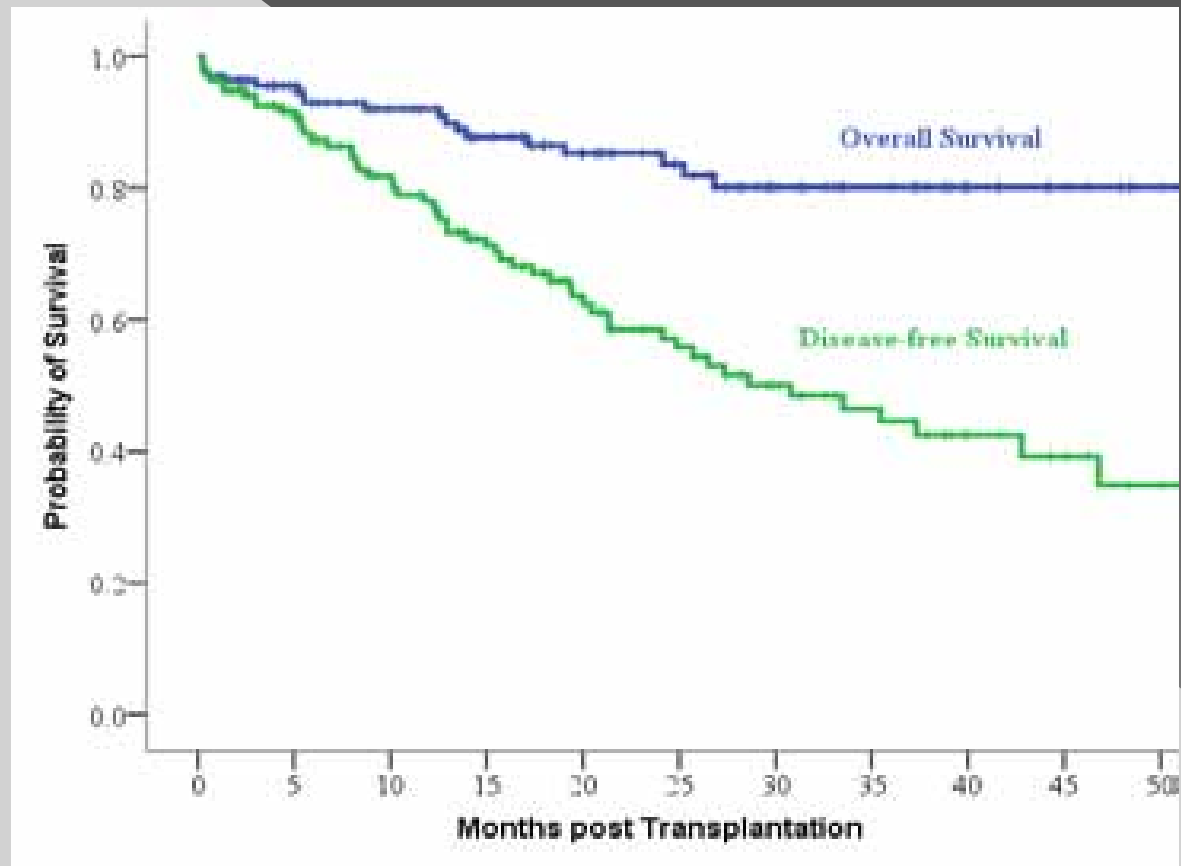


Relapse	52 (37%)
Alive	114 (82%)

Causes of death	No
Relapse	19
infection	6

# Multiple Myeloma Outpatients

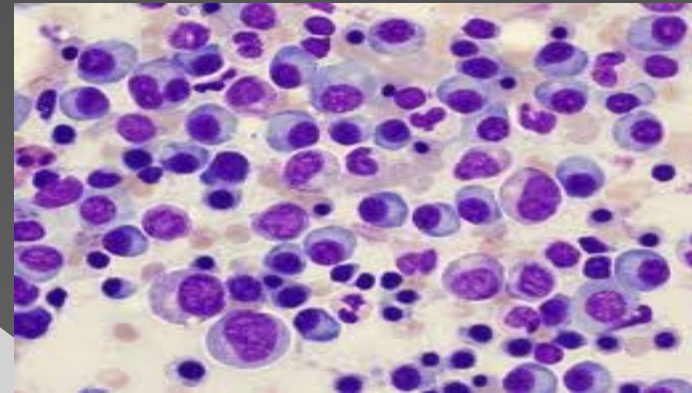
DFS & OS



# Outpatients ward

First transplantation was done in Dec 2005  
All of the were Autologous PB

Diseases	No
Multiple Myeloma	99
Hodgkin	24
NHL	10
AML	6
Total	139



Relapse	52 (37%)
Alive	114 (82%)

Causes of death	No
Relapse	19
infection	6

# Studies in Progress

- ❖ Unrelated transplantation
- ❖ Haploidentical HSCT
- ❖ Cord Blood & double Cord Blood HSCT
- ❖ Use of Mesenchymal stem cells



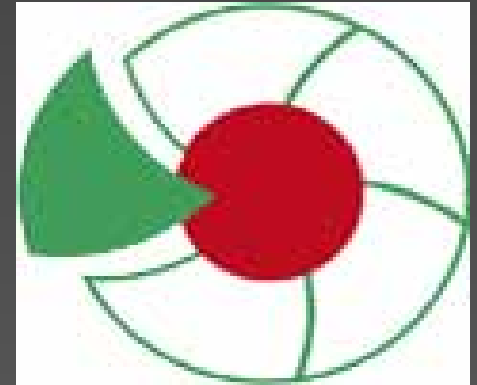


# Cord blood Bank



- First Iranian public cord blood bank
- Established at 2002
- Gathering cord blood cells from multiple Gynecology/ Obstetric centers
- First CB transplantation was done at 1998
- 50 Cord blood transplantations done
- Development of bank and new methods of storage and tests
- **3007 stored (2450 HLA-typed)**

# HLA- Bank



- Iranian stem cell donor program
  - > (بانک اهدا کنندگان سلولهای بنیادی)
- First in Middle - East
- At 1999 joined to BMDW and WMDA
- Search for matched donors all over the world
- It is growing day to day with increasing number of volunteers
- **36260 online registered (2633 HLA-typed)**



# BONE MARROW DONORS WORLDWIDE

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## Welcome to Bone Marrow Donors Worldwide

Bone Marrow Donors Worldwide (BMDW) is the continuing effort to collect the HLA phenotypes and other relevant data of volunteer stem cell donors and cord blood units, and is responsible for the co-ordination of their worldwide distribution. Participants are 69 stem cell donor registries from 50 countries, and 49 cord blood banks from 32 countries.

The current number of donors and cord blood units in the BMDW database is:

**21,814,138** (21,236,385 donors and 577,753 CBU's)

There are currently 833 users from 498 organisations authorized to access the on-line BMDW services.

You may want to see the increase of the number of stem cell donors and cord blood units, or an overview of the [number of donors and cord blood units for each participating registry](#).

Bone Marrow Donors Worldwide started as an initiative of the Immunobiology Working Party of the European Group of Blood and Marrow Transplantation (EBMT) in 1988. In February 1989 the first edition was distributed, which contained the donor files of eight registries with a total of 155,000 volunteer stem cell donors.

## On-line Match Programs

If you are looking for the on-line match programs, click on the "[BMDW Match Programs](#)" link in the menu. To request access to the on-line services, go to the [Authorization](#) page and follow the instructions.



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## Stem Cell Donor Registries and Cord Blood Banks participating in BMDW

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) [all](#)

Country  Continent

### [INCA/REDOME](#)

#### Match codes: Brazil [BR]

Instituto Nacional de Cancer-INCA  
Ministerio da Saude - MS  
Rua de Resende, 195  
20231-091 Rio de Janeiro  
Brazil

TEL: +55-21-3207-5216

FAX: +55-21-3207-5286

[Details](#)

Email: [redome.internacional@inca.gov.br](mailto:redome.internacional@inca.gov.br)  
Website: <http://www.inca.gov.br/>

Date registered: 2011-03-22

WHDA member

### [Iranian Stem Cell Donor Program \(ISCDP\)](#)

#### Match codes: Iran [IR] / Iran CORD [IRCB]

Hematology-Oncology and SCT Research Center  
Shariati Hospital  
Tehran University of Medicine Sciences  
Kargar Shomali Ave.  
Tehran  
Iran, Islamic Republic of

TEL: +98-21-8822-0043

TEL: +98-21-8490-2669

FAX: +98-21-8825-1686

[Details](#)

Email: [iscdp@tums.ac.ir](mailto:iscdp@tums.ac.ir)  
Website: <http://iscdp.tums.ac.ir/>

Date registered: 2011-03-08

Emergency phone number: +98-912-1593-270

### [Irish Unrelated Bone Marrow Registry](#)

#### Match codes: Ireland [IRL]

Thank You

